PREPARING FOR THE PSYCHOLOGICAL CONSEQUENCES OF TERRORISM

A PUBLIC HEALTH STRATEGY

INSTITUTE OF MEDICINE
OF THE NATIONAL ACADEMIES

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Committee on Responding to the Psychological Consequences of Terrorism

Board on Neuroscience and Behavioral Health

Adrienne Stith Butler, Allison M. Panzer, Lewis R. Goldfrank, *Editors*

INSTITUTE OF MEDICINE
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Willing is not enough; we must do."
—Goethe

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Although the reviewers listed above have provided many constructive comments and suggestions, they were not asked to endorse the conclusions or recommendations nor did they see the final draft of the report before its release. The review of this report was overseen by **Lester N. Wright,** Deputy Commissioner and Chief Medical Officer, New York Department of Correctional Services, and **Charles Tilly,** Joseph L. Buttenwieser Professor of Social Science, Columbia University, New York, NY. Appointed by the National Research Council and Institute of Medicine, they were responsible for making certain that an independent examination of this report was carried out in accordance with institutional procedures and that all review comments were carefully considered. Responsibility for the final content of this report rests entirely with the authoring committee and the institution.

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Susanne A. Stoiber, IOM Executive Officer; *Richard Nakamura*, Acting Director, National Institute of Mental Health; and *Gail P. Hutchings*, Acting Director, Center for Mental Health Services, Substance Abuse and Mental Health Services Administration. Workshop speakers included, in order of appearance, *Roxane Cohen Silver*, Department of Psychology and Social Behavior, University of California, Irvine; *Robert DeMartino*, Center for Mental Health Services, SAMHSA; *Audrey Burnam*, Health Division, RAND Corporation; *James Jaranson*, Center for Victims of Torture, University of Minnesota; *Elizabeth Todd-Bazemore*, Disaster Mental Health Institute, University of South Dakota; *Paul Kesner*, Safe and Drug Free Schools Program, US Department of Education; *Seth Hassett*, Center for Mental Health Services, SAMHSA; *Col. Ann Norwood*, Dept. of Psychiatry, Uniformed Services University of the Heath Sciences; *Dori B. Reissman*, Bioterrorism Preparedness and Response Program, Centers for Disease Control and Prevention; *Kathryn McKay Turman*, Office of Victim Assistance, Federal Bureau of Investigations; *Alfonso R. Batres*, Readjustment Counseling Services, Department of Veterans Affairs; *Chip Felton*, Center for Performance Evaluation and Outcomes Management, New York State Office of Mental Health; *Betty Pfefferbaum*, Department of Psychiatry and Behavioral Sciences, University of Oklahoma College of Medicine; *Ruby E. Brown*, Community Resilience Project, Arlington County Department of Human Services; *Reverend Deacon Michael E. Murray*, Interfaith Crisis Chaplaincy; *Judith Shindul-Rothschild*, Boston College School of Nursing; *Kathleen D'Amato-Smith*, formerly of Merrill Lynch Employee Assistance Program; *Margaret M. Pepe*, American Red Cross Disaster Services; *Margaret Heldring*, America's HealthTogether; *Thomas H. Bornemann*, The Carter Center; *Ivan C.A. Walks*, formerly of Department of Health, District of Columbia; and *Monica Schoch-Spana*, Center for Civilian Biodefense, Johns Hopkins University. The committee thanks each of these individuals. A summary of major themes from the workshop is presented in Appendix A.

Finally, the committee would also like to thank the many individuals who provided information pertinent to the committee's charge including *Shauna Spencer*, Washington, DC, Department of Mental Health; *Dan Dodgen*, *Jan Peterson*, *Georgia Sargeant*, and *Susan Brandon*, American Psychological Association; *William Goldman*, University of California, San Francisco; *Sandro Galea*, New York Academy of Medicine; *Steven Mirin* and *Lloyd Sederer*, American Psychiatric Association; *Susan Solomon*, Office for Behavioral and Social Sciences Research, National Institutes of Health; *Robert Pynoos*, University of California, Los Angeles; *Glenn Fiedelholtz*, Science Applications International Corporation; *Randal Quevillon*, University of South Dakota; and *Terri Tanielian*, RAND.

Preface

Our study panel began deliberations with significantly divergent views on the meaning of the concept of "psychological consequences" and the definition of terrorism. In addition we had many perspectives on the appropriate preventive and therapeutic roles of public health and mental health systems with respect to the psychological consequences of terrorism. We agreed that terrorism affected humans in all walks of life and that societal terrorists are as diverse as the individuals they terrorize in society. We reflected on those in the inner city where chronic violence is rampant, those attacked by Timothy McVeigh in Oklahoma City, and those who died in the Al-Qaeda World Trade Center attack. We knew that the biological and physical consequences of terrorism were less prevalent than the emotional, behavioral, and cognitive consequences.

When we thought as a panel representing numerous disciplines, a unifying public health strategy became apparent. Since the forms, manifestations, and effects of terrorism are so diverse, we chose to adopt a public health plan to assist in preparation for and response to the psychological consequences of terrorism. We chose the Haddon Matrix, which utilizes the factors (affected individuals and populations, terrorist and injurious agent, and physical and social environment) and phases (pre-event, event, and post-event) that permit an analytic modeling of the psychological consequences of terrorism. This strategy allows the investigator to utilize public health methodology to analyze the biological–physical, psychological, and sociocultural characteristics at each phase of a terrorist event for each factor under consideration.

It is our belief that the power of this strategy is that it necessitates the

participation of all members of a society to achieve preparedness. This modeling allows for the demonstration of areas of nonparticipation, noncompliance, noncollaboration, and systemic inadequacies.

It is our hope that in preparing for the unknown, investigators will also study local forms of violence—serial rapists and school shootings and the behaviors of Theodore Kaczynski, Timothy McVeigh, the purveyor of the anthrax letters, and Al-Qaeda. Utilizing this approach will facilitate the roles of investigators from the fields of public health, mental health, and emergency preparedness in analyzing the available countermeasures.

The last line (end results) of the Haddon Matrix truly is the bottom line in the development of an integrated societal approach that avoids adverse end results. If we can assist in limiting the number of adversely affected individuals and populations, in limiting the adverse effects on the physical and social environment, and in affecting the behavior and efficacy of terrorists and their agents by motivating the development of countermeasures, we will have been successful.

Federal, state, and local authorities as well as communities will be better prepared when individual response plans are integrated. Local and regional collaborative networks must emphasize the use of newly empowered and educated personnel in a continuum from the school and workplace to those providing primary health care and emergency response as well as those in the broad areas of mental health and public health The establishment of these networks will allow effective coordination and cooperation among and within agencies. This demanding type of collaboration emphasizing honest inter- and intra-agency criticism will facilitate the creation of a level of societal competence that is the greatest force in confronting terrorism. The integration of all those who participate in emergency preparedness into a public health structure depends on rigorous continuing education and improvement. This integration empowers local communities, permitting the flexibility and creativity necessary to respond to the psychological consequences of terrorism.

Finally, we recognized that preparing the entire society necessitates incorporating rational public health education into childhood education, into the efforts of faith-based organizations, into the workplace, and throughout each community whenever educational opportunities arise. This education must demystify the complexities of our modern world, permitting a better understanding of human risk while focusing extensively on the dehumanizing effects on children and adults of observing interpersonal violence of any sort—from domestic violence to random

shootings to explosive assaults. By recognizing that preparation for the psychological consequences of terrorism is an ongoing social problem, we will devote our energies to an understanding of the factors and events essential to inform strategies to achieve population health.

I believe that our work will assist in achieving these essential societal goals.

Lewis R. Goldfrank, M.D.
Chair
Committee on Responding to the Psychological
Consequences of Terrorism

Contents

Executive Summary

ABSTRACT

Terrorism involves the illegal use or threatened use of violence, is intended to coerce societies or governments by inducing fear in their populations, and typically involves ideological and political motives. The attacks on September 11, 2001, have made Americans acutely aware of the devastation of terrorism. As the nation engages in the "war on terrorism," the psychological health of the public must not be neglected.

Terrorism, whether in the form of a mass physical attack or a chemical, biological, radiological, or nuclear event, can be psychologically devastating. Psychological consequences include an array of emotional, behavioral, and cognitive reactions. People may experience insomnia, fear, anxiety, vulnerability, anger, increased alcohol consumption, or smoking, and a minority will develop psychiatric illnesses such as posttraumatic stress disorder or depression. The number of people affected and the severity of consequences will vary according to the type and intensity of the event. The broad nature of these consequences demands a full public health response.

The nation's mental health, public health, medical, and emergency response systems currently are not able to meet the psychological needs that result from terrorism. Gaps exist in the coordination of agencies and services, training and supervision of professionals, public communication and dissemination of information, financing, and knowledge- and evidence-based services.

Management of the psychological consequences of terrorism will require a range of interventions at multiple levels involving a variety of service providers. Interventions are needed for the pre-event, event, and post-event phases of a terrorist attack and will have to address affected individuals and populations,

the broader social environment, and the terrorists who seek to harm. The committee offers an example for a public health strategy that may serve as a base from which plans to prevent and respond to the psychological consequences of a variety of terrorism events can be formulated. This approach is a strategic vision for assessing the completeness and effectiveness of plans, and to defining and addressing gaps in preparedness and response. It is hoped that lessons learned from preparing for the psychological consequences of terrorism may serve additional benefits by being applied to a variety of other violent events that affect the population. By comprehensively addressing the physical, psychological, and sociocultural needs of the population, the desired end result will be achieved—that is, the limitation of adverse psychological consequences, facilitation of growth and empowerment, minimization of disruptions to daily life, and enhancement of community cohesion.

The ongoing threat of domestic terrorism is a critical concern for the United States. The Oklahoma City bombing, intentional crashing of airliners on September 11, 2001, and anthrax attacks in the fall of 2001 are recent and gripping examples of the intentional infliction of psychological and physical pain. There is a new sense of vulnerability in this country, and the uncertainties of where and when the next attack might occur introduce anxiety and stress in much of our society.

The events of September 11, 2001—multiple attacks on sites that were symbols of our nation—made salient the unpredictable and catastrophic nature of terrorism. These events and the subsequent anthrax attacks challenged federal, state, and local systems of response in new ways. As the nation contends with these new realities, we are reminded that events which frighten and intimidate communities have existed for some time. The shootings at Columbine High School, the Unabomber, the fall 2002 sniper shootings in the Washington, D.C., metropolitan area, and the violence that occurs so frequently in the nation's urban areas are examples of violent events used to injure and provoke fear. These events occur more commonly than acts of terrorism. It is hoped that preparing for terrorism events will allow the nation to be better prepared for the more common events that also can be devastating to psychological health.

Terrorism is defined as follows:

> illegal use or threatened use of force or violence; an intent to coerce societies or governments by inducing fear in their populations; typically with ideological and political motives and justifications; an "extrasocietal" element, either "outside" society in the case of domestic terrorism or "foreign" in the case of international terrorism.[1]

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[1] National Research Council. 2002. Smelser NJ, Mitchell F, Editors. *Terrorism: Perspectives from the Behavioral and Social Sciences*. Washington, DC: The National Academies Press.

Terrorism includes a range of actors (including the perpetrators, those who are the targets, and those third parities that sponsor, collaborate, and sympathize with terrorists); a multitude of actions; and results in a variety of social, psychological, physical, and economic consequences. Terrorism has the ability to disrupt numerous aspects of individual and community functioning. Attending to the psychological needs of the population is a crucial part of recovery from a terrorism event, and preparedness and response present a challenge for the nation.

Addressing the physical, psychological, and social needs that result from the range of terrorism events or hazards (conventional explosives, biological, radiological, chemical, nuclear attacks) will require universal preparedness by all systems responsible for the public's health. Preparedness and response are required for all hazards, all segments of the population, and all phases of the event (pre-event, event, and post-event).

CONTEXT OF THE REPORT

The Institute of Medicine (IOM) was asked to highlight some of the critical issues in responding to the psychological needs that result from terrorism and to provide possible options for intervention. This report identifies gaps in the knowledge necessary to inform policies and procedures for planning, preparedness, and intervention as well as identifies gaps in planning, preparedness, and the public health infrastructure. The report also identifies a variety of approaches to intervention to limit adverse psychological consequences and provides recommendations for options on how to optimize the public health response to the long-term and short-term psychological consequences of terrorism.

This Executive Summary presents only abbreviated versions of the study committee's recommendations. For the full recommendations, and a more extensive justification of each, the reader is referred to the full committee report.

WHAT ARE THE PSYCHOLOGICAL CONSEQUENCES OF TERRORISM?

The psychological consequences of terrorism encompass a range of emotional, behavioral, and cognitive reactions that occur in the population as the result of an event or threat of an event. These consequences include distress responses, changes in behavior, and diagnosed psychiatric illness (see Figure ES-1). No one goes through a traumatic event unchanged, and psychological consequences are manifested, to varying degrees of severity, in the population. Distress responses may include insomnia and increased feelings of anxiety, anger, or vulnerability. Be-

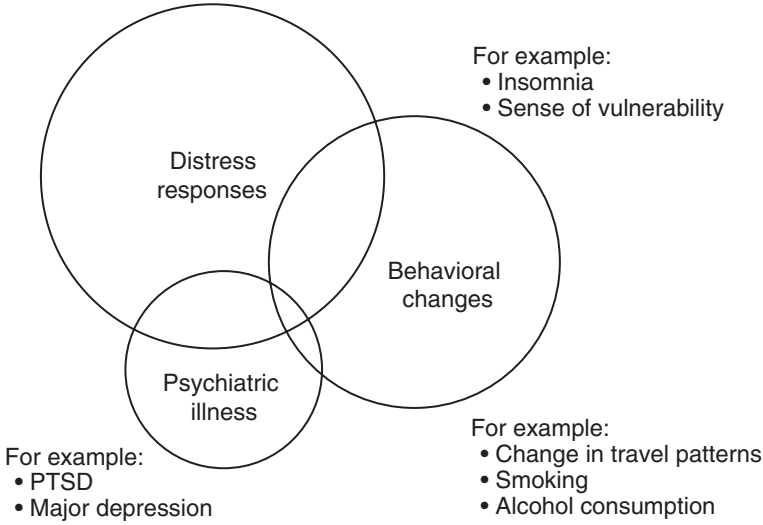

FIGURE ES-1 Psychological consequences of disaster and terrorism.
NOTE: Indicative only; note to scale.

havioral changes may include actions such as avoiding air travel, increasing smoking, or increasing alcohol consumption. Other behavioral changes may include gathering information about actions to take in response to the event or in preparation for future events, increasing communication with loved ones, or volunteering. Psychiatric illness related to a terrorism event may include posttraumatic stress disorder (PTSD) or depression. After a terrorism event, it is expected that most people will experience mild or infrequent behavioral changes or distress responses, while a smaller number will experience moderate or more frequent symptoms. A minority of people will suffer symptoms severe enough to warrant the diagnosis of a psychiatric disorder.

The body of literature examining the psychological consequences of terrorism is growing but remains relatively small. Much of what is used to determine how individuals and communities may react to terrorism is derived from the broader trauma literature, including that which examines disasters. Although there may be some similarities between other types of disasters and terrorism, the malicious intent and unpredictable nature of terrorism may carry a particularly devastating impact for those directly and indirectly affected. Continued investigation of terrorism events will help to improve understanding of the effects on various segments of the population and will provide an evidence base for prevention and intervention efforts.

The committee finds that terrorism and the threat of terrorism will have psychological consequences for a major portion of the population, not merely a small minority. Research studies that have examined a range of terrorism events indicate that psychological reactions and psychiatric symptoms clearly develop in many individuals. To optimize the overall health and well-being of the population, and to improve the overall response to terrorism events, it is necessary that these potential consequences be addressed preventively as well as throughout the phases of an event.

Recommendation 2-1: The Department of Health and Human Services (HHS), including the National Institutes of Health (NIH), the Substance Abuse and Mental Health Services Administration (SAMHSA), and the Centers for Disease Control and Prevention (CDC), should develop evidence-based techniques, training, and education in psychological first aid[2] to address all hazards and all members of society during the pre-event, event, and immediate post-event phases of a terrorism event in order to limit the psychological consequences of terrorism.

Recommendation 2-2: HHS, including NIH, SAMHSA, and CDC, should develop public health surveillance for pre-event, event, and post-event factors relevant to addressing the psychological consequences of terrorism and should develop methods for applying the findings of this surveillance through appropriate interventions for groups of special interest.

TERRORISM AND THE PUBLIC'S HEALTH

The public's health is dependent on both psychological and physical well-being. The goal of the nation's public health system is to ensure the health of the population "through organized, interdisciplinary efforts that address the physical, mental and environmental health concerns of communities and populations at risk for disease and injury."[3] The prevention and treatment of psychological consequences that result from terrorism events should be an integral part of public health efforts.

Terrorism events and the threat of terrorism have affected and will continue to affect the population. Among the primary objectives of terror-

[2] Psychological first aid (PFA) refers to a set of skills identified to limit distress and negative health behaviors (e.g., smoking) that can increase fear, arousal, and subsequent health care utilization. PFA is described in detail in Chapter 4 of the full report.

[3] Association of Schools of Public Health. *What Is Public Health*. [Online]. Available: www.asph.org/aa_section.cfm?section_id=3 [accessed February 6, 2003].

ism are the psychological and physical injury of communities and populations. Therefore, there is a critical need for a public health approach to the psychological consequences resulting from terrorism. In order to ensure the public's health, efforts must be expanded beyond treatment for individuals who are most severely affected to comprehensive prevention and health promotion. The psychological health of the nation is critical to sustaining the nation's capabilities, values, and infrastructure.

The committee takes a public health approach to the psychological consequences of terrorism that focuses on prevention and health promotion as well as treatment. It adapts an epidemiologic model of disease transmission, which has been applied to the understanding and prevention of physical injuries and is termed the Haddon Matrix. In this model, an agent introduces a disease or condition to a host. Environmental factors will affect the opportunity for the agent and host to interact. A vector or vehicle may carry the agent to the host. Pre-event, event, and post-event phases in the process of sustaining an injury add an opportunity to understand the factors contributing to injury in each stage, which may lead to improved prevention and interventions.

Adapting the Haddon Matrix to psychological injuries resulting from terrorism offers an opportunity to examine what is needed to respond comprehensively and systematically to the needs of the public. The Haddon Matrix was a landmark in injury prevention, and is widely used to help categorize what is known about prevention and control and to help set priorities in public health approaches to motor vehicle collisions and other major causes of morbidity and mortality. In conceptualizing this model for psychological consequences, the committee views the terrorist's *violent act or threat* and the resulting fear and dread of future attacks as the agent affecting the population (Table ES-1). The host is redefined as the *affected individuals and populations* or those persons who are the targets of the terrorist act. At the level of the vector, or vehicle, the terrorist and his or her act are fused and become the *terrorist and injurious*

TABLE ES-1 Application of the Public Health Model to Understand and Organize Factors Involved in the Psychological Consequences of Terrorism

Epidemiologic Terms	Psychological Terms
Agent	Violent act or threat
Host	Affected individuals and populations
Vector or vehicle	Terrorist and injurious agent, the way terror is propagated
Environment	Physical and social environment

agent (e.g., individuals crashing airliners, shooting others, or contaminating food or water supplies). The vector can also refer to the way the terror is propagated. Thus the media, particularly television, may also become a vector. The environment is further defined as the *physical and social environment.* It is not only the physical setting, but also the broader community and cultural context in which the event occurs.

Responding to the psychological needs of the public that arise as a consequence of terrorism may provide an opportunity to address the psychological effects of a variety of violent events and other disasters. These events are associated with a greater incidence of morbidity, including psychological injury, and mortality. The application and practice of strategies for preparedness and intervention may also assist in preparing the nation to respond to new terrorism threats.

GAPS IN THE CURRENT INFRASTRUCTURE

Effective preparation and response for terrorism require a strong and cohesive infrastructure. Currently, a diverse array of individuals, groups, organizations, and agencies will respond to a terrorism event. Given the number and variety of these responders and of the public needs, there are inherent difficulties in planning and coordinating services and preventive efforts. The nation's infrastructure should provide the following 10 functions to effectively protect and respond to the public's psychological health as it relates to terrorism:

1. Provision of basic resources including food, shelter, communication, transportation, information, guidance, and medical services
2. Interventions and programs to promote individual and community resilience and prevent adverse psychological effects
3. Surveillance for psychological consequences, including distress responses, behavior changes, and psychiatric illness, and markers of individual and community functioning before, during, and after a terrorism event
4. Screening of psychological symptoms at the individual level
5. Treatment for acute and long-term effects of psychological trauma
6. Response for longer-term general human service needs that contribute to psychological functioning (e.g., housing, financial assistance when the event creates job loss)
7. Risk communication and dissemination of information to the public, media, political leaders, and service providers
8. Training of service providers (in medical, public health, emergency, and mental health systems) to respond to a terrorism event and to protect themselves against psychological trauma

9. Capacity to handle a large increase in demand for services to address psychological consequences in the event of a terrorist attack
10. Case-finding ability to locate individuals who have not utilized mental health services but need them, including underserved, marginalized, and unrecognized groups of people (e.g., undocumented immigrants, homebound individuals) and others with unidentified needs

The federal government administers a number of programs and services that are initiated in response to disasters. These systems focus largely on intervention and treatment for immediate needs, rather than on prevention and health promotion before an event or on longer-term needs. The relationships among the various agencies and programs are complex and promise to change as the newly established Department of Homeland Security continues to take form. The nation's response to an emergency situation is currently dictated by the Federal Response Plan, which coordinates the efforts of 27 federal departments and agencies and the American Red Cross. Federal assistance typically applies only to large-scale events that overwhelm local capacity. The range of federal agencies involved in responding to psychological consequences in the event of disasters include the CDC, Department of Education, Department of Veterans Affairs, and SAMHSA, among others. In addition, the National Institute of Mental Health plays the crucial role of establishing the research agenda for federal funding.

Each state is required to have a disaster plan that dictates responses in the event of an emergency. These disaster plans are required to have a mental health component, although there is no standard approach for incorporating such issues. Most of the actual response is implemented through local community mental health services. Local mental health agencies are challenged in the event of a disaster due to the demands of continuing care for their regular populations in addition to serving the larger community who may experience disaster-related psychological consequences.

The private sector includes a wide variety of providers who are important in delivering services in response to disaster. The largest, and perhaps most well recognized, is the American Red Cross. The Red Cross works to meet basic human needs after a disaster, which include the provision of supportive counseling. Other private-sector systems that may provide support and services for addressing psychological consequences include the workplace, primary care settings, faith-based services, and other private mental health providers. The workplace is a particularly important setting for response because most acts of terrorism in the United States have occurred when people are at their places of employment.

The committee finds that the workplace is a newly recognized and important environment in which to address public health planning for the psychological consequences of terrorism. Some examples of new occupationally exposed groups include construction workers, postal workers, utility workers, public health workers, and children and teachers in schools. Implementation of universal preparedness is required for the workplace, but specific considerations will be needed for critical occupational sites. Recent terrorism events have involved workplaces and new categories of responders and have exposed traditional first responders to new levels of job-related stress and risk exposure.

Recommendation 3-4: The National Institute for Occupation Safety and Health (NIOSH) and the Department of Labor should collaborate to ensure the existence of appropriate guidelines to protect workers by incorporating the psychological aspects of disaster preparedness into all planning and interventions. Because schools are a workplace for staff and students, the Department of Education should collaborate with state and local education systems to ensure preparedness.

While the ability of the nation's infrastructure to respond to large-scale terrorism events has not been extensively tested, the responses to events such as the 1995 Oklahoma City bombing, September 11, 2001, attacks, 2001 anthrax attacks, and 2002 Washington, D.C., area sniper shootings can be instructive. These events provide an opportunity to identify gaps in systems of response and to offer suggestions that may achieve better integration of systems to respond more effectively to future terrorism events, both large and small. The gaps in current systems of services can be categorized into five general areas:

1. Coordination of agencies and services
2. Training and supervision
3. Public communication and dissemination of information
4. Financing
5. Knowledge- and evidence-based services

The *coordination of agencies and services* includes the organization and management of different types of services to individuals with different needs and to the same individuals over time as their needs change. It encompasses points such as licensing and credentialing of providers and clarifying the roles of various service providers. This is a multilevel–multidisciplinary issue that also involves communication between different levels of government and the integration of various sources of funding.

Issues related to *training and supervision* include the shortage of mental health providers with disaster training and experience. Skilled providers will help to ensure effective and adequate treatment. Providers who are unlicensed require additional supervision. *Public communication and dissemination of information* are crucial following a terrorism event, particularly in the case of chemical, biological, radiological, or nuclear terrorism when instruction will be critical for effective management. Public communication and dissemination of information include issues such as addressing who delivers information and how it is communicated. *Financing* of services and planning for psychological consequences is frequently inadequate. The amount of funding, duration of funding, services eligible for coverage, and inclusion of mental health services in broader terrorism preparedness plans are areas requiring attention. One of the most critical problems in identifying effective prevention and response plans is that the *knowledge- and evidence-base* necessary to inform policies and practice is severely lacking. Models for promoting community recovery and resilience, early interventions, and preparedness are required, as is a more comprehensive understanding of the psychological impact of terrorism events.

The committee finds that many mental health professionals do not have specific knowledge with regard to disaster mental health. Training and education emphasizing psychological consequences and methods of response should be provided to professionals within the mental health fields, including school-based mental health practitioners such as school counselors, school psychologists, and school social workers.

Recommendation 3-1: Academic healthcare centers, professional associations and societies for mental health professionals, and state boards of education, in collaboration with HHS, including SAMHSA, NIH, and CDC, should ensure the education and training of mental health care providers, including community- and school-based mental health care providers on responding to the psychological consequences of terrorism.

The committee finds that a broad spectrum of professional responders is necessary to meet psychological needs effectively. Those outside the mental health professions, who may regularly interface with the public, can contribute substantially to community healing. These professionals include, but are not limited to, primary care providers, teachers and other school officials, workplace officials, government officials, and faith-based and other community leaders. However, these professionals will require knowledge and training in order to provide effective support. Basic knowledge of psychological reactions, as well as training in

support techniques and recognizing serious symptoms that necessitate referral, should be provided.

Recommendation 3-2: Academic centers and professional associations and societies, in collaboration with HHS, including SAMHSA, NIH, and CDC, should ensure the education and training of relevant professionals in health fields, including primary care providers, school-based health care providers, public health officials, and the public safety sector, in the psychological consequences of terrorism.

Recommendation 3-3: SAMHSA, in collaboration with academic centers and state and local health care agencies, should ensure the provision of education and training in the psychological consequences of terrorism for a range of relevant community leaders and ancillary providers.

The committee finds that research following terrorism events presents a multitude of practical and ethical challenges. Utilizing findings from research on other traumatized populations is not an adequate substitute, and support of disaster-specific and terrorism-specific research is necessary to provide information pertinent to the population and its needs for intervention. This research can be facilitated by improving cooperation and coordination among federal funding and regulatory agencies as well as by developing the high-quality methodology necessary for the conduct of these investigations.

Recommendation 3-5: Federal agencies such as CDC, NIH, SAMHSA, and NIOSH should coordinate research agendas, cooperate in establishing funding mechanisms, and award timely and sufficient funding of research on best practices to inform and guide interventions that will address the psychological consequences of terrorism.

DEVELOPING STRATEGIES FOR LIMITING THE PSYCHOLOGICAL CONSEQUENCES OF TERRORISM

Interventions are required to ensure that the priority needs discussed above are met and gaps are covered. Although most research provides little in the way of evidence-based prevention and intervention strategies for addressing psychological needs after terrorism events, this should not prohibit action. The committee offers suggestions for prevention and response strategies based on what is known about responses to disasters, the small but growing body of evidence pertaining to psychological con-

sequences of terrorism, and reasonable assumptions regarding ways to promote and protect the public's mental health. It is noted that many of these proposed strategies lack evidence of efficacy but represent the present consensus of experts. *A substantial need is to evaluate the efficacy of each of these interventions.*

Adaptation of the Haddon Matrix to the psychological consequences of terrorism offers a useful way to organize and categorize components of societal infrastructure for prevention and intervention. Using the matrix as a base for organization, a range of issues is highlighted in Table ES-2 that will warrant attention in response to a terrorism event and represent considerations for prevention and intervention at each phase of an event. The pre-event, event, and post-event phases of the strategy also correspond to the Department of Homeland Security's emergency management program of preparedness, mitigation, response, and recovery. The committee has added to the Haddon Matrix an additional dimension within each cell to reflect interventions at the biological—physical, psychological, and sociocultural levels. A full discussion of points listed in Table ES-2 are provided in Chapter 4 of the report. Many of the strategies cover the ten functions listed as necessary for an adequately prepared infrastructure and address the five areas identified as gaps (coordination of agencies and services, training and supervision, public communication and dissemination of information, financing, and knowledge- and evidence-based services).

Factors related to the terrorist and injurious agent are not addressed in this report but are discussed in other National Research Council reports (see *Discouraging Terrorism: Some Implications of 9/11*[4] and *Terrorism: Perspectives from the Behavioral and Social Sciences*[5]). The intent of illustrating these features here is to offer a comprehensive representation of factors that will warrant an integrated analysis by those managing the diverse systems that ensure the nation's health and safety. The committee also presents this comprehensive perspective to illustrate the point that addressing the public's psychological needs is critical to general terrorism preparedness and response.

The example public health strategy is offered to help organize and categorize known and hypothesized interventions. It is proposed as a basic plan from which more detailed and tailored plans can be derived to fit the variety and complexity of terrorism events that may arise. Methods to achieve these plans and strategies for coordinating systems will need to be tested and evaluated. It is hoped that the committee's plan will stimu-

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[4] National Research Council. 2002a. Smelser NJ, Mitchell F, Editors. *Discouraging Terrorism: Some Implications of 9/11*. Washington, DC: The National Academies Press.

[5] National Research Council. 2002c. Smelser NJ, Mitchell F, Editors. *Terrorism: Perspectives from the Behavioral and Social Sciences*. Washington, DC: The National Academies Press.

late further development and investigation of elements that will provide the necessary framework for effective planning and response to protect the public's health during the ongoing war on terrorism.

The committee finds that management of the psychological consequences of terrorism (and similar community events) is a pressing public health issue. Psychological interventions are needed for the pre-event, event, and post-event phases of terrorist attacks. Such interventions are necessary to address potentially affected individuals and populations, the injurious agents, and the physical and social environment, as identified in the committee's example public health strategy. The nation's present mental health system is an essential, but inadequate, resource to meet all the expected needs.

Recommendation 4-1: HHS and the Department of Homeland Security should analyze federal, state, and local preparedness for terrorism to ensure that the nation's public health infrastructure is prepared to adequately respond to the psychological consequences across a continuum of possible terrorism events, including weapons of mass destruction. The committee's example public health strategy should serve as a base from which components of the infrastructure are evaluated.

Recommendation 4-2: Federal, state, and local disaster planners must address psychological consequences in their planning and preparedness and in their response to pre-event, event, and post-event phases of terrorist attacks. Consideration should be given to needs associated with different types of terrorism events and to needs for various segments of the population. Adequate federal, state, and local prioritization and funding of resources and support should be provided to ensure psychological preparedness and response.

The committee concludes that the infrastructure responsible for protecting the public's health is unprepared to meet the psychological needs that will result from a terrorism event and the ongoing threats of terrorism and, furthermore, that the public's mental health must be a central part of the nation's efforts to protect against and counter terrorism. The committee's public health strategy, as outlined in Table S-2, is devised as a strategic vision for assessing the completeness and effectiveness of plans to address the consequences of terrorism. Comprehensively addressing the physical, psychological, and sociocultural needs of the population will help to achieve the desired end result—that is, the mitigation of adverse psychological consequences, facilitation of growth and empowerment, minimization of disruptions to daily life, and enhanced community cohesion.

TABLE ES-2 An Example Public Health Strategy: Preparing for the Psychological Consequences of Terrorism
Example of a public health plan to assist in preparation for and response to the psychological consequences of a terrorism event utilizing phases and factors adapted from the Haddon Matrix.

	Factors		
Phases	**Affected Individuals and Populations**	**Terrorist and Injurious Agent***	**Physical and Social Environment**

Pre-event	**Biological–Physical**
	• Stockpile vaccinations, antibiotics, antidotes
	• Train emergency, medical, and public health professionals in spectrum of skills necessary to respond to incidents
	• Conduct baseline health surveillance
	Psychological
	• Integrate psychological and mental health into all public health and emergency preparedness plans
	• Design and implement psychological first aid training
	• Prepare materials for media and public education
	• Identify groups of special interest
	• Train all relevant health professionals in disaster mental health and psychological consequences of terrorism
	• Train other relevant service providers
		Biological–Physical
		• Make chemical, biological, radiological, and nuclear weapons difficult to obtain
		• Decrease information and dissemination about how to produce weapons
		• Make buildings safer, and trains and planes less likely to be hijacked, and develop inherent detection systems in potential agents
		• Decrease available resources and disrupt terrorist groups
		Psychological
		• Describe prevention efforts in biological–physical areas and achieve positive publicity
		• Explain consequences for terrorists
		Sociocultural
		• Study conditions that foster terrorism
		• Make certain there are lawful ways for terrorists to communicate legitimate concerns
			Biological–Physical
			• Ensure that buildings, planes, water, food, etc., are tested and protected
			Psychological
			• Develop an effective risk communication strategy
			  • Identify and train spokespersons
			  • Inform the public about prevention and safety efforts
			• Provision of information that educates populations about expectable responses and coping strategies that would increase community resilience
			Sociocultural
			• Develop terrorism response plans
			• Ensure the community is appropriately represented in pre-event planning
			• Address and ensure equity in the allocation of resources

	Sociocultural • Identify population characteristics important to intervention • Develop geo-mapping of populations, potential targets, and community resources • Identify and implement methods for educating the public • Ensure adequate public health and mental health care systems		
Event	**Biological–Physical** • Implement public health–mental health response • Provide basic needs • Provide appropriate interventions **Psychological and Sociocultural** • Implement psychological first aid • Affected population responds appropriately and takes action to minimize exposure to agent, including implementing disaster behaviors • Distribute information appropriate to the event	**Biological–Physical** • Develop systems to interdict during an event • Describe to the public the available organizational and communication systems **Psychological and Sociocultural** • Consider how to mobilize trauma workers and notify survivors of services in the absence of functioning communication systems	**Biological–Physical** • Respond to alarms • Respond to surveillance system • Dispatch emergency personnel and involve public health and medical care systems • Monitor immediate threats **Psychological and Sociocultural** • Communicate risk and proposed response effectively

continued

TABLE ES-2 Continued

Phases	Factors		
	Affected Individuals and Populations	**Terrorist and Injurious Agent***	**Physical and Social Environment**
Post-event	**Biological–Physical** • Minimize secondary consequences • Triage and treat as necessary • Recover, identify, and bury dead **Psychological** • Continue psychological first aid • Conduct individual, group, and population assessments to identify specific needs in response to event including the assessment, triage, and treatment of psychological injury • Consider intervention needs of special populations **Sociocultural** • Communicate that preparedness helped decrease impact of the attack • Publicize availability of targeted services to appropriate segments of the population • Produce public information and warnings • Promote family and community cohesion	**Biological–Physical** • Respond quickly to seek out and punish those responsible • Decrease availability or toxicity of agents used in the attack so that the next attack will not be so deadly **Psychological** • Communicate deterrent information **Sociocultural** • Identify better ways to decrease activity of terrorists	**Biological–Physical** • Evaluate effectiveness of emergency plan and disaster response • Mitigate ongoing health risk and secure physical infrastructure • Monitor ongoing threat **Psychological** • Limit secondary exposure • Adjust risk communication, emphasizing the positive • Devise a public mental health strategy to assist communities, groups (workplace and schools), families and individuals to cope with trauma reminders Sociocultural • Establish strategies for community healing

Desired end results	• Mitigate or prevent adverse consequences including:
	  ° Distress
	  ° Negative behavioral change
	  ° Psychiatric illness
	  ° Poor job performance or loss of job
	  ° Physical injury
	• Increase positive adaptive behaviors
	• Facilitate posttraumatic growth
	• Increase empowerment
		• Minimize loss of life and impact of disease processes
		• Minimize spread of infectious agents
		• Minimize destruction of buildings and infrastructure
		• Provide an environment that allows for rapid recovery and rehabilitation
			• Minimize disruption in daily routines of life
			• Enhance community cohesion

* Although factors related to the terrorist and injurious agent include elements that may have psychological consequences (for example, decreasing information and dissemination about how to produce weapons may make the public feel more safe and decrease anxiety), they are not addressed in this report. These are factors likely addressed by the infrastructure's law enforcement sector, rather than public health, emergency, or medical services. The intent of illustrating these items in this table is to present an example of the full array of factors that warrant the joint attention of all systems responsible for the health and safety of the public in preparation for and response to terrorism events.

Strategies for Preparing for and Responding to the Psychological Consequences of Terrorism

Summary of Recommendations

Preventive Measures

Recommendation 2-1: HHS, including NIH, SAMHSA, and CDC, should develop evidence-based techniques, training and education in psychological first aid.

Recommendation 2-2: HHS, including NIH, SAMHSA, and CDC, should develop public health surveillance for pre-event, event, and post-event factors related to the psychological consequences of terrorism.

Education and Training for Providers

Recommendation 3-1: Academic healthcare centers, professional associations and societies for mental health professionals, and state boards of education, in collaboration with HHS, including SAMHSA, NIH, and CDC, should ensure the education and training of mental health care providers on responding to the psychological consequences of terrorism.

Recommendation 3-2: Academic centers and professional associations and societies, in collaboration with HHS, including SAMHSA, NIH, and CDC, should ensure the education and training of relevant professionals in health fields in the psychological consequences of terrorism.

Recommendation 3-3: SAMHSA, in collaboration with academic centers and state and local health care agencies, should ensure the provision of education and training in the psychological consequences of terrorism for a range of relevant community leaders and ancillary providers.

Workplace Preparedness

Recommendation 3-4: NIOSH, the Department of Labor, and the Department of Education should ensure appropriate guidelines to protect people in a variety of work environments including response sectors, food production and distribution, and schools.

Research Needs

Recommendation 3-5: Federal agencies should coordinate research agendas, cooperate in funding, and award timely and sufficient funding.

Ensuring Preparedness Through a Comprehensive Public Health Strategy

Recommendation 4-1: HHS and the Department of Homeland Security should analyze terrorism preparedness to ensure that the public health infrastructure is prepared to respond to the psychological consequences of terrorism.

Recommendation 4-2: Federal, state, and local disaster planners should address psychological consequences in their planning and preparedness for terrorist attacks.

1
Introduction: Rationale for a Public Health Response to the Psychological Consequences of Terrorism

Much of the nation's attention since September 2001 has focused on the "war on terrorism" and on ensuring the safety of the nation. Efforts have included pursuing potential terrorists, detecting potential terrorist plots, developing policies to vaccinate against smallpox, and securing the nation's airports and landmarks. Often overlooked, however, is the need to prepare the country for one of the primary objectives of terrorism—psychological injury. Terrorism is, after all, a direct intent to terrorize. It is a psychological assault intended to intimidate and instill fear in communities, societies, or populations. The stress associated with the direct impact and lingering threat of terrorism raises obvious psychological concerns, particularly for the most vulnerable—children, those with mental illness, first responders, minority and immigrant populations—who have suddenly lost a secure environment. Although the extent of the longer-term impact remains largely unknown, the potential for persistent psychological consequences is a concern. Physiological responses to chronic stress can increase the risk of disease within the population. The consequences for the public's health can be extensive as the health care system is inundated with people who believe they may have been exposed to harmful agents or who become alarmed over minor symptoms. Following terrorism events, the demand for medical and mental health care services can potentially exceed available resources. As such, the need to prepare for and respond to the psychological consequences of terrorism should be an important part of the nation's effort to secure the health and well-being of its citizens, residents, and visitors.

The current focus on terrorism reminds us that other traumatic and

violent events occur in many American communities and have for many years. School shootings, workplace shootings, and the violence that plagues so many of the nation's communities may similarly instill fear and anxiety in individuals and communities. These ongoing issues and events should not be forgotten. The need to psychologically prepare the nation for terrorism events highlights the additional benefits of this kind of preparation for other traumatic and violent events that affect U.S. communities. Universal preparedness for all hazards (conventional explosives, biological, radiological, chemical, nuclear terrorist attacks), all segments of the population, and all phases of events should be a priority for the protection of the public's mental health.

CHARGE TO THE COMMITTEE

The Institute of Medicine (IOM) Committee on Responding to the Psychological Consequences of Terrorism was established to highlight some of the critical issues in responding to the psychological needs that result from terrorism and to provide possible options for intervention. Specifically, the charge presented to this committee of seven members was as follows:

> The committee is asked to plan a workshop that addresses the mental health issues that result as a consequence of terrorism. Topics of the workshop will include:
>
> • The immediate and long-term psychological consequences of both terrorism involving weapons with immediate death and injury [mass violence events] (e.g., conventional explosives, chemical weapons) and terrorism involving delayed or indeterminate risk of death and injury [perceived-threat event] (e.g., bioterrorism, radiological terrorism, man-caused contamination of water, air, food supply). Both mental health and substance abuse will be addressed.
>
> • Identification of vulnerable populations.
>
> • The public health infrastructure that is available to address the mental health needs of the population. This includes available strategies for surveillance, screening, and follow-up for post-disaster distress.
>
> • The capacity of that infrastructure to deliver efficacious intervention; provide the necessary expertise, skills, and training for key health and human services providers; and handle the anticipated increase in demand for mental health services.

From the input of the workshop, the committee will:

1. Identify gaps in knowledge necessary to inform policies and procedures for planning, preparedness, and intervention. Identify gaps in planning, preparedness, and public health infrastructure necessary for successful implementation of interventions. Consideration should be given to the locus of responsibility (federal, state, local government, private sector) for addressing the identified gaps.

2. Identify a variety of approaches to intervention to limit adverse mental health consequences. These may range from public health messages to individual counseling. Consideration should be given to the locus of responsibility (federal, state, local government, private sector) for ensuring and coordinating implementation. Mass violence events, perceived-threat events, and chronic events may each require different interventions. If there is an inadequate knowledge base, it may not be possible to identify an appropriate approach or locus of responsibility; instead development of new approaches may be called for.

3. Provide recommendations for options on how to optimize the public health response to long-term and short-term mental health consequences of terrorism.

During the 10-month study, the committee convened for three meetings, in October 2002, December 2002, and February 2003, and hosted one public workshop at the October meeting (see Appendix A for workshop agenda and participants). The committee did not have the time or resources to create a comprehensive response plan or to conduct an exhaustive review of the literature regarding the psychological consequences of terrorism. It is also beyond the scope of this report to consider the psychology of terrorism and its causes. For further review of these topics the reader is referred to *Discouraging Terrorism: Some Implications of 9/11* (NRC, 2002a) and *Terrorism: Perspectives from the Behavioral and Social Sciences* (NRC, 2002c). Rather, the intent of this report is to highlight the critical issues for prevention and intervention and to provide possible options for response.

There are a multitude of definitions of terrorism, and the range of activities that can be considered as terrorist acts is vast and complex. In its interpretation of the charge, the committee adopts as a guideline the working definition of terrorism provided in *Terrorism: Perspectives from the Behavioral and Social Sciences* (NRC, 2002c, pp. 14–15):

> illegal use or threatened use of force or violence; an intent to coerce societies or governments by inducing fear in their populations; typically with ideological and political motives and justifications; an "extrasocietal" element, either "outside" society in the case of domestic terrorism or "foreign" in the case of international terrorism.

This guiding definition allows for the consideration of events such as the attacks on September 11, 2001, the Oklahoma City bombing, 2001 anthrax attacks, and potential events involving the use radiological, chemical, or nuclear weapons.

Terrorism: Perspectives from the Behavioral and Social Sciences proposes a dimensional approach in considering the range of actors, actions, and consequences involved in terrorism activities. At a basic level, dimensions are organized in the following manner:

I. Actors
   A. Perpetrators (including identification and visibility, organization, and belief system)
   B. Victims (includes national identity of victims and victim's connection to his/her country)
   C. Third parties (includes for example sponsors, collaborators, and sympathizers)

II. Actions
   A. Mechanisms of attack (includes physical, chemical, and biological)
   B. Nature of target (people and/or organizations)
   C. Degree of violence
   D. Scope of violence (localized, multiple simultaneous, or widespread and continuous)
   E. Degree of surprise

III. Consequences
   A. Physical damage to infrastructure
   B. Biological damage to people, plants
   C. Environmental damage
   D. Psychological damage
   E. Social disruption
   F. Economic disruption

For a complete listing and explanation of dimensions, see NRC (2002c, pp. 63–68).

This dimensional view of terrorism illustrates the critical point that terrorism includes a range of actors and a multitude of actions, and results in a variety of social, psychological, physical, and economic consequences. Given these diverse consequences, terrorism has the ability to disrupt numerous aspects of individual and community functioning. Addressing the psychological needs of the population will help to facilitate recovery from a terrorism event.

Throughout this report, all forms of terrorism are included in the term (conventional explosives, chemical, biological, radiological, nuclear) unless otherwise specified. The committee considers acts of terrorism car-

ried out in the United States and implications for the infrastructure's response capabilities. The committee emphasizes the importance of preparedness to limit adverse psychological effects and considers a range of psychological sequelae from distress responses to psychiatric disorders.

The term *psychological consequences* is used by the committee as a global one to describe the spectrum of emotional, behavioral, and cognitive effects that result as a consequence of terrorism. The committee groups this spectrum of consequences into three spheres, each falling within the domain of psychological consequences. These spheres, which are described in further detail in the section that follows, include distress responses, behavioral changes, and psychiatric illness.

TERRORISM AND THE PUBLIC'S HEALTH: THE NEED FOR A PUBLIC HEALTH RESPONSE TO THE PSYCHOLOGICAL CONSEQUENCES OF TERRORISM

Why Is the Public's Health Linked to Psychological Health?

Traditionally, psychological health has not received the same consideration or support as physical health by local, state, and federal systems, healthcare providers, or the general public. Those with psychiatric disorders are often stigmatized and seen as flawed or weak by society. Treatment for psychiatric disorders is generally provided in service systems that receive inadequate funding and are separate from those providing medical treatment. However, it is the general view of social scientists that psychological disorders are determined by a combination of physical, psychological, and social factors, and that the public's health is dependent on psychological and physical well-being (HHS, 1999). The separation of psychological and physical health service systems is not consistent with this notion of combined determinants of health. Health is of primary importance to any society because "many aspects of human potential such as employment, social relationships and political participation are contingent on it" (IOM, 2003). Therefore, ensuring health should be a shared societal goal.

The mission of the public health field is to ensure conditions in which people can be healthy (IOM, 1988). The field sets about this mission "through organized, interdisciplinary efforts that address the physical, mental and environmental health concerns of communities and populations at risk for disease and injury" (Association of Schools of Public Health, 2003), and is focused on health promotion and disease prevention, in addition to etiology, diagnosis, and treatment of disease.

It follows that the prevention and treatment of psychiatric disorders and the promotion of psychological well-being should be an integral part

of public health efforts. Leaders on national and global fronts have called for this integration of health services. The World Health Organization (WHO, 2002) and the U.S. Surgeon General (HHS, 1999) have identified the need for a public health approach to mental illness that expands efforts beyond treatment for the most severely affected individuals. Strategies for a public mental health approach to psychological reactions to disaster among children have also been proposed (Pynoos, Goenjian, & Steinberg, 1995).

The implications for responses to terrorism are clear. As stated above, the goal of terrorism is to induce terror and fear. Although relatively few may be directly affected physically by a terrorism event, massive numbers may feel uncertainty, fear, and anxiety. Terrorism is primarily a psychological assault that erodes our sense of safety and sense of security, two of the most basic human needs. As such, the public's mental health must be a central element of the nation's efforts to protect against and counter terrorism.

Implications of Terrorism for the Public's Health

In response to the attacks on September 11, 2001, the United States government initiated measures to ensure "homeland security." Funds were allocated to detect and respond to threats of terrorism. While the nation's security has traditionally been built on military, economic, and more recently, information capabilities, the public's health should be added as a critical component of national protection and defense (Ursano, 2002). Our systems for medical and public health response are inadequate to address the challenges presented by a major terrorism event (Barbera and McIntyre, 2002), and the current organization and financing of medical and public health systems are problematic.

The public's health is dependent upon our public health infrastructure, the public and private medical care system, and our emergency response system (see Figure 1-1). The public health system addresses public health practice and policies of personal and community or environmental health protection, disease and injury prevention, health promotion, and surveillance. The medical care system is an integral component of the infrastructure responsible for the public's health, identifying early cases involved in outbreaks of illness, monitoring ongoing health, and providing interventions and treatment to populations at risk and to those with disease. The emergency response system includes emergency medical services, police, fire and emergency infrastructure response capability (for example, water, electricity, communications). The mental health system, which traditionally functions as a subset of the medical care system, has not been supported to adequately respond to the perva-

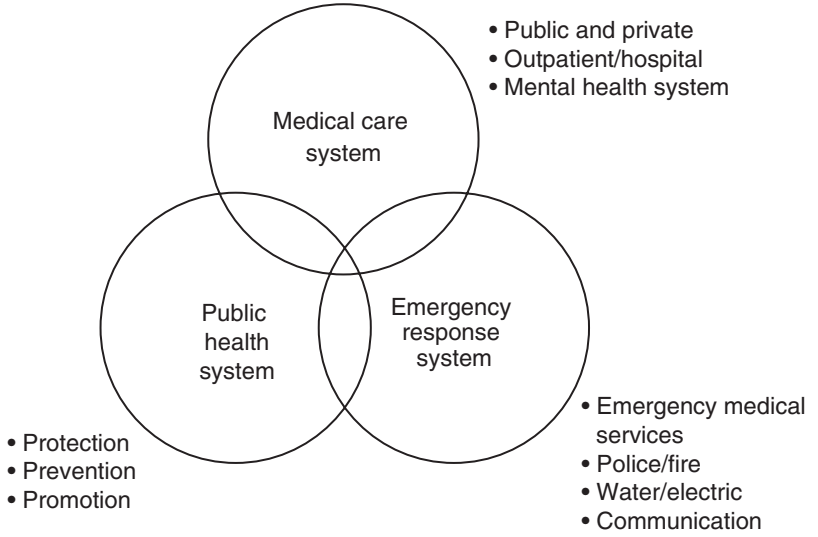

FIGURE 1-1 Systems responsible for the public's health. SOURCE: Ursano (2002).

sive mental health needs that result from terrorism. The shared goals, responsibilities, and responses of the public health, medical care, and emergency medical systems in planning, preparedness, and intervention will be crucial for effective response to terrorism events (Fullerton et al., 2003).

The psychological health of the public is critical to sustaining the nation's capabilities, values, and infrastructure. Responses to critical events such as terrorism emphasize the need to address the psychological effects of these events on the population; locally, regionally, and nationally. For example, thousands in three regions of the country were directly affected by the attacks on September 11, 2001, and millions across the nation were exposed and potentially psychologically affected through media coverage. As discussed earlier in this chapter, possible manifestations of terrorism in the population include behavioral changes, distress responses, and psychiatric disease (see Figure 1-2). Behavioral changes refer to actions such as avoiding air travel; increased smoking or alcohol consumption; and neglect of healthy routines and habits such as appropriate exercise, nutrition, and rest. Other more adaptive behavior changes may include gathering information to prepare for future events, increasing contact and communication with friends and family, or volunteering. Changes in behavior may be made to reduce the perceived risk of harm (for example, by avoiding air travel) or they may reflect inner states of mind (for example, smoking, neglect of healthy routines). Distress re-

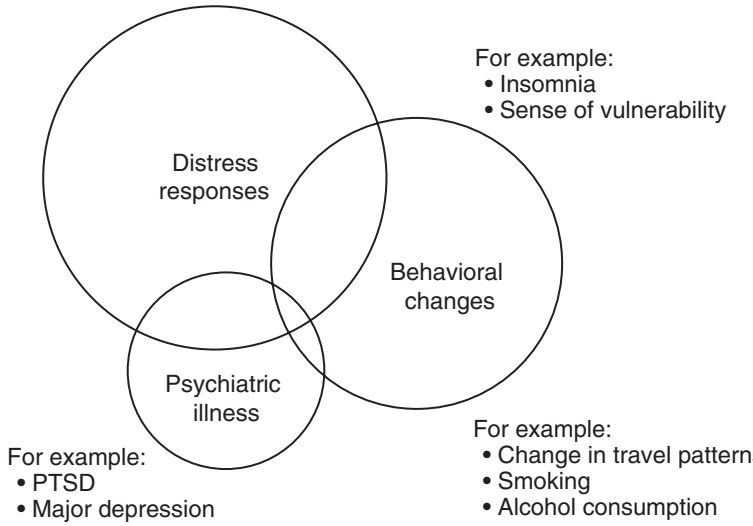

FIGURE 1-2 Psychological consequences of disaster and terrorism. NOTE: Indicative only; not to scale. SOURCE: Ursano (2002)

sponses include, but are not limited to insomnia and increased feelings of anxiety, anger, and vulnerability. The occurrence of psychiatric disease includes, for example, posttraumatic stress disorder (PTSD), and depressive disorder.

The threats to life and the propagation of fear created by a terrorist attack can infect a community, much as a microbe creates an infectious disease outbreak. This phenomenon of terrorism requires new attention to and coordination of the public's mental health. Events such as the fall 2001 anthrax attacks; the September 11, 2001, attacks; and the 1995 Oklahoma City bombing place demands on systems that support the public's health. These increased demands raised two important questions for this committee:

1. How can and should the psychological needs of a society impacted by terrorism be met by the mental health, medical care, public health, and emergency response systems?
2. What are the current and proposed components of these systems to address the effects of terrorism on the population?

Redefining the Relationship Between Psychological Health and Public Health: Terrorist Act as Agent

Public health's analysis of the distribution, frequency, determinants, and control of disease in populations has served as a basis for health policy. Epidemiologic principles of infectious diseases enhance the understanding of disease outbreaks and illustrate the processes of transmission. The principles are reflected in the epidemiologic triad, namely: (1) an external agent, (2) a susceptible host, and (3) an environment that brings the host and agent together, resulting in disease (CDC, 2003) (see Table 1-1). The agent (for example, microbe or toxin) refers to a factor necessary for the introduction of the disease or condition. The susceptible host refers to the characteristics of the individual (for example, age, gender, behavior) that influence a person's exposure, susceptibility, or response to the agent. The environment is an extrinsic factor (for example, climate, sanitation, health services) that affects the opportunity for the agent and host to interact. A vector (or vehicle) may carry the agent to the host.

William Haddon, Jr., a leading figure in the field of epidemiology, expanded the use of the triad of epidemiologic factors and applied these public health concepts to the understanding and prevention of injuries (Haddon, 1972; 1980). This was a novel application because the field of injury prevention at that time had largely been outside the purview of public health. Haddon considered energy transferred to humans as the agent. Injury resulted when the energy in excess of that which the human body was able to safely sustain was transferred through an object (vehicle or vector) to the victim (host). These factors interacted within a physical or social environment to produce injury (see, for example, Table 1-2).

Haddon added to this model an additional dimension that reflected phases in the process of sustaining an injury. He termed these phases pre-event, event, and post-event. A contribution of this model, termed

TABLE 1-1 Use of the Public Health Model to Understand and Organize Factors Involved in Transmission of Disease

Factors	Infectious Disease Model: Lyme Disease
Agent	Spirochete
Host	Human
Vector or vehicle	Tick
Environment	Wooded area, lack of protective clothing

TABLE 1-2 Use of the Public Health Model to Understand and Organize Factors Involved in the Transmission of Injury

Factors	Injury Model: Car Crash
Agent	Energy
Host	Human
Vector or vehicle	Car
Environment	Speeding without wearing seat belt

TABLE 1-3 Haddon Matrix Applied to the Prevention of Car Crash-Related Injuries

	Factors		
Phases	**Human (Host)**	**Car (Vehicle or Vector)**	**Speeding without Seat Belt (Environment)**
Pre-event	Driver's education	Building of cars with crumple zones and airbags	Guard rails and divided highways
Event	Use of seat belts	Activation of antilock breaks and deployment of airbags	Witnesses contact emergency medical services
Post-event	First aid	Use of emergency equipment to rescue victims	Emergency care and rehabilitation
End Result	Injured passengers	Damaged car	Damage to property and/or other cars

the Haddon Matrix (see Table 1-3), was that understanding the factors contributing to injury in each cell would lead to improved prevention of and interventions for injuries.

The Haddon Matrix represents a landmark in injury prevention and is widely used to help categorize what is known about prevention and control and to help set priorities in a public health approach to motor vehicle collisions and other major causes of morbidity and mortality. Similarly, epidemiologic principles have been applied to other public health hazards such as firearm injury (Kellermann et al., 1991) and heroin use (Jonas, 1972) to guide prevention and intervention efforts. The use of

the adapted Haddon Matrix for psychological injuries resulting from terrorism lends itself to a logical examination of components of the mental health and public health systems needed to respond adequately to the needs of the public.

In conceptualizing this model to help organize responses to psychological consequences of terrorism, the committee views the *terrorist act or threat* and the resulting fear and dread of future attacks as the agent affecting the population. Alternate labels for the terms *host*, *vector* or *vehicle*, and *environment* are also offered (see Table 1-4). The host is redefined as the *individuals and populations* affected by terrorism or those persons who are the targets of the terrorist act. At the level of the vector or vehicle, the terrorist and his or her act are fused and become the *terrorist and injurious agent* (for example, individuals crashing airliners, shooting others, or contaminating food or water supplies). The vector can also refer to the way the terror is propagated. Thus the media, particularly television, may also become a vector. The environment is further defined as the *physical and social environment*. It is not only the physical setting, but also the broader community context in which the event occurs.

The consequences of and responses to terrorism are, in some respects, similar to other disasters. However, there is a crucial difference between terrorism and other kinds of disasters. In a natural or unintentional human-caused disaster (for example, transportation or technological catastrophes), the agent can be viewed as the energy transferred to individuals and/or property, in the form of a hurricane, earthquake, or crash. However, in the case of terrorism, the agent is a purposeful and malicious act. The terrorist act often has political or ideological motivations and is a strategy of those with limited political, military, or social strength attacking those with substantial strength (NRC, 2002a). This adds a psychological dimension to terrorism that makes it unique with regard to other forms of disasters. By adapting the Haddon Matrix, the model can be developed for psychological injuries as shown in Table 1-4.

TABLE 1-4 Application of the Public Health Model to Understand and Organize Factors Involved in the Psychological Consequences of Terrorism

Epidemiologic Terms	Psychological Terms
Agent	Violent act or threat
Host	Affected individuals and populations
Vector or vehicle	Terrorist and injurious agent, the way terror is propagated
Environment	Physical and social environment

To this model is added a second dimension to reflect pre-event, event, and post-event phases. These phases also correspond to the Department of Homeland Security's emergency management program of preparedness, mitigation, response, and recovery. The Department's mission is to protect the nation from all hazards through activities targeted at each of these phases. Pre-event strategies include preparedness (through management of first responders and the development of a national training and evaluation system) and risk mitigation (promoting structures and communities that have a reduced chance of being impacted by disasters). Event phase efforts correspond to the Department's response efforts carried out by emergency and other federal response assets. Finally, the post-event phase of the matrix corresponds to the Department's recovery phase which is focused on restoration after loss of life and health, destruction of families, fear and panic, loss of confidence in government, destruction of property, and disruption of commerce and financial markets.

Table 1-5 illustrates how this modified Haddon Matrix can be used to examine the September 11, 2001, attacks on the World Trade Center. Table 1-6 illustrates how the matrix analysis can then be used to formulate interventions to prevent or reduce the psychological impact of the event.

TABLE 1-5 Matrix of Phases and Factors Involved in the Psychological Impact of Terrorist Attacks—World Trade Center (WTC) Attack, 2001

	Factors		
Phases	**Affected Individuals and Populations**	**Terrorist and Injurious Agent**	**Physical and Social Environment**
Pre-event	Psychological unpreparedness for the attack	Vulnerability of aircraft to hijackers	Vulnerability of WTC to attack (structural, symbolic nature, height)
Event	Exposure to the violence of the attack	Aircraft turned into weapon of mass destruction	Towers collapse
Post-event	Inadequate assessment and treatment of psychological consequences	Numerous bomb threats	Relocation of Lower Manhattan residents
End results	Distress responses, behavioral change, psychiatric illness	Terrorists gain greater visibility	Disruption of support networks

TABLE 1-6 Interventions for Psychological Consequences of Terrorism, Using Phases and Factors of World Trade Center Terrorist Attacks, 2001

	Factors		
Phases	**Affected Individuals and Populations**	**Terrorist and Injurious Agent**	**Physical and Social Environment**
Pre-event	Design and implement psychological first aid training	Communicate efforts to limit actions of terrorist and agent on the public (e.g., increased security at airports)	Have plans in place detailing federal, state, and local agency roles in prevention and detection including mental health response
Event	Population uses skills taught during pre-event phase	Mobilize trauma workers to respond to survivors and families of victims	Communicate that organizational response systems are in place and working
Post-event	Assessment, triage, and treatment of psychological injuries	Communicate that response to attack will help decrease impact of future attacks	Adjust risk communication, emphasizing the positive
End results	Limit distress responses, negative behavior changes, and psychiatric illness	Minimize loss of life and impact of attack	Minimize disruption in daily routines

As discussed at the outset of this chapter, adequate preparation for the range of terrorism events may serve an added benefit of helping to inform responses to other commonly occurring violent events that can also be devastating on psychological health. Violent and fearful events such as shootings in schools and places of employment and the violence that plagues many of the nation's urban centers take place across this country on a smaller scale and are far less publicized. Random acts of violence have always existed—disgruntled employees shooting and killing coworkers and supervisors, serial killers stalking young women or children, racially motivated killings, hate crimes, and murder and violence occurring in many communities. These acts have occurred with greater frequency than the types of dramatic terrorism events we have

recently experienced. Responding to the mental health needs of the public that arise as a consequence of terrorism provides an opportunity to also address the psychological effects of a variety of violent events and other disasters. In turn, applying and practicing strategies for preparedness and intervention in these other violent events, which are associated with a greater incidence of morbidity, mortality, and psychological injury, will also serve to make the nation better prepared to respond to the new terrorism threats. The cost of doing nothing—neglecting the public's mental health, whether the event results from suicide bombers, perpetrators of biological attacks, or gang violence—is enormous because violence and terrorism undermine the nation's security and prosperity and limits the health potential and well-being of our population.

Presently Existing and Needed Components of Mental Health and Public Health Systems

A shift from the traditional focus on the psychological health of individuals toward a community- and population-based emphasis will be crucial for the success of measures to prevent and limit the psychological sequelae and to improve the public's mental health in response to attacks or threats of terrorism. The use of the Haddon Matrix for thinking about the psychological effects of terrorism as an injury offers intriguing possibilities not only for understanding various levels of risk and opportunities for intervention, but also for integrating psychological health into a public health framework. By examining a specific factor at a given point in the phases of the injury, one can identify risk factors and groups, intervention approaches, locus of responsibility for the strategy, gaps in knowledge, and further research needed to guide intervention. These components of the health system should address strategies to promote health behaviors (for example, attention to healthy routines, seeking information/education, increasing family and community cohesion); protection from trauma exposure; the needs of vulnerable populations (for example, children, the seriously mentally ill, first responders); attending to disrupted well-being and emergent disease (for example, PTSD, major depression); and capabilities for health surveillance and triage.

CONTENT AND STRUCTURE OF THE REPORT

The purpose of this report is to identify gaps in the knowledge necessary to guide policy and procedures for response, provide a variety of approaches to interventions, and offer recommendations to optimize the public health response to the psychological consequences of terrorism. The committee addresses these issues through use of the adapted public

health model described above to discuss how psychological needs can best be met by mental health, medical care, public health, and emergency response systems.

Chapter 2 provides a brief overview of the literature on the psychological consequences of trauma, disasters, and terrorism. Although it is beyond the scope of this report to provide an exhaustive review of the literature, Chapter 2 highlights the psychological sequelae following a variety of traumatic events for both the general population and vulnerable populations. For an additional review of the responses of individuals and organizations to terrorism events and the threat of terrorism, the reader is referred to *Making the Nation Safer: The Role of Science and Technology in Countering Terrorism* (NRC, 2002b).

Chapter 3 reviews existing systems for response to psychological needs at federal, state, and local levels. It identifies gaps in the knowledge needed to inform policies and practices and also identifies gaps in planning, preparedness, and the current infrastructure.

Chapter 4 provides a more detailed and expanded version of the public health strategy for organizing responses to terrorism, which was introduced in this chapter. The model serves as the basis for the committee's discussion of the need for integrated public health, medical care, and mental health systems and provides a variety of approaches to planning, preparedness, and intervention. Finally, Chapter 5 provides the committee's recommendations for ways to achieve effective preparedness and response.

Finding 1: Terrorism involves the illegal use or threatened use of force or violence to instill fear in populations, and an intent to coerce societies or governments by inducing fear in their populations. Other acts of community violence can also be devastating to psychological health. Pervasive violence, such as repetitive urban assaults, school shootings, and workplace violence, are events that affect small and large, urban and rural communities. These events have elements that may be similar to terrorism in terms of psychological impact, and lessons learned from responses to terrorism may help to inform responses to these other events. Similarly, lessons learned from pervasive community violence may provide some benefits for examining responses to terrorism events.

2
Understanding the Psychological Consequences of Traumatic Events, Disasters, and Terrorism

Terrorism is intended to provoke collective fear and uncertainty. This fear can spread rapidly and is not limited to those experiencing the event directly—others that are affected include family members of victims and survivors, and people who are exposed through broadcast images. Psychological suffering is usually more prevalent than the physical injuries from a terrorism event. Understanding these psychological consequences is critical to the nation's efforts to develop intervention strategies at the pre-event, event, and post-event phases that will limit the adverse psychological effects of terrorism.

This chapter serves as a brief overview of the literature on traumatic events, disasters, and terrorism. It first reviews a sample of the literature on the psychological consequences of traumatic events and disasters. The chapter then describes the smaller body of research that specifically examines the consequences of terrorist attacks and discusses how the consequences of terrorism may differ from other types of traumatic events. This chapter is not meant to represent a thorough review of the trauma and disaster literature; rather it is intended to highlight some of the salient and relevant findings that may direct responses to terrorism events. For a comprehensive review, the reader is referred to Holloway et al. (1997), Norris et al. (2002a, 2002b), and Rubonis and Bickman (1991).

TRAUMATIC EVENTS

The effect of traumatic events on human functioning has been a subject of study for many years. An abundance of research has examined

traumatic events ranging from individual events such as motor vehicle crashes and sexual assaults to community-wide events such as natural disasters, commercial airplane crashes, and community violence, as well as global events such as war.

As defined by the The Diagnostic and Statistical Manual of Mental Disorders—Fourth Edition (DSM-IV), a traumatic event—or witnessing such an event—triggers fear, helplessness, or horror in response to the perceived or actual threat of injury or death to the individual or to another (APA, 1994). Traumatic events are usually perceived by the individual to be life-threatening, unexpected, and infrequent, and are characterized by high intensity (Ursano et al., 1994). However, traumatic events may be repeated within a community, and in such environments the presence of a threat may become the norm. Evidence suggests that the type and severity of outcomes often vary according to the type of event (Freedy and Donkervoet, 1995).

The effect of exposure to a traumatic event is variable and specific to the individual; both psychological and physiological responses can vary widely. Social context, biological and genetic makeup, past experiences, and future expectations will interact with characteristics of the traumatic experience to produce the individual's psychological response (Ursano et al., 1992). In general, those exposed to a traumatic event show increased rates of acute stress disorder, posttraumatic stress disorder (PTSD), major depression, panic disorder, generalized anxiety disorder, and substance use disorder (Kessler et al., 1995). Although psychiatric illnesses such as PTSD are the more severe outcomes of traumatic events, they are also the best studied. Much of the research literature has focused specifically on PTSD because it is a recognized and well-defined result of traumatic events (see Box 2-1). However, PTSD is just one outcome in a myriad of consequences resulting from traumatic events.

Spectrum of Consequences of Traumatic Events

The experience of a traumatic event does not necessarily lead to serious psychological difficulties. As discussed in Chapter 1, there is a spectrum of consequences ranging from distress responses such as mild anxiety, to behavioral changes such as mild difficulty sleeping, to the onset of a diagnosable psychiatric illness (see Figure 1-2). These consequences generally can be placed into three categories of severity, which may also correspond to strategies for intervention:

- The majority of people may experience mild distress responses and/or behavioral change, such as insomnia, feeling upset, worrying, and increased smoking or alcohol use. These individuals will likely recover

Box 2-1
Posttraumatic Stress Disorder

PTSD and acute stress disorder (ASD) are two of the primary DSM-IV illnesses that are diagnosed after a traumatic event. The diagnosis of both PTSD and ASD requires exposure to a traumatic event and a response to the event that meets the threshold for each of three symptom groups: reexperiencing, numbing or avoidance of reminders of the event, and hypervigilance. ASD also requires the presence of early dissociative symptoms. PTSD can be diagnosed when the symptoms cause significant distress and impairment and have been present together for at least one month. Acute stress disorder is diagnosed within the first month after a traumatic experience when clinically significant distress or impairment in functioning is present, and when the symptoms are new subsequent to the traumatic event. Acute stress disorder is associated with an increased risk of PTSD (e.g., Harvey and Bryant, 1998). PTSD symptoms seen within days of a traumatic event have a limited independent capacity to predict long-term or delayed psychiatric outcome (Shalev, 1992) since they are quite prevalent (North et al., 1999) and often describe a normal psychological reaction to traumatic events.

In PTSD, there are unusual metabolic and physiological patterns of the major stress hormones, abnormalities in some of the memory and emotion regions of the brain, and alterations of the serotonergic, dopaminergic, and opioid systems (see, for example, Heim et al., 1997; van der Kolk, 1996; Yehuda, 2002). These changes are directly implicated in some of the symptoms of PTSD such as hyperarousal.

Studies in the United States have shown that 8–9 percent of the population will experience PTSD at some point in their lives (Breslau et al., 1998; Kessler et al., 1995). Different types of traumatic events may have different rates of PTSD associated with them. It has been estimated that the risk of PTSD is greater after violence involving personal assault than after other forms of trauma (Breslau et al., 198; Kessler et al. 1995). Women are more likely than men to develop PTSD following traumatic events (Kessler et al., 1995; North et al., 1999). Other factors predicting PTSD and other psychiatric illness after traumatic events include low socioeconomic status, history of previous traumatic events, and history of mental illness (Green, 1994; Yehuda, 2002).

In population studies, current PTSD significantly predicts subsequent onset of all other anxiety disorders, substance use disorders, major depression, and dysthymia for both men and women (Kessler, 2000), and PTSD is very often comorbid with these other disorders (e.g., Breslau et al., 1998; Kessler et al., 1995). Although about 50 percent of individuals with PTSD will demonstrate remission within six months, the remainder may have persistent symptoms for years (HHS, 1999).

with no required treatment, but may benefit from education and community-wide supportive interventions.

- A smaller group may have more moderate symptoms such as persistent insomnia and anxiety and will likely benefit from psychological and medical supportive interventions.
- A small subgroup will develop psychiatric illnesses such as PTSD or major depression and will require specialized treatment.

The number of people experiencing each of these outcomes varies directly with the severity of the event and with proximity of exposure to it. Most people will experience mild or infrequent symptoms, while only a few may experience frequent and/or severe symptoms. Because terrorist attacks may cause violent injury, death, and destruction, there often will be a targeted population that experiences extreme trauma, a widening group of family members and friends who are also therefore directly affected, and an even larger community and societal population who are confronted with the danger of terrorism through the media and on a daily basis. Furthermore, the relative number of people in any one of these categories is based not only on the population but also characteristics of the event itself. Figure 2-1 provides a conceptual illustration of this relationship between proximity and severity, and outcomes; it should be kept in mind that this curve is theoretical and proportions will change in some situations.

The association between severity and/or number of symptoms and the number of people affected is important to consider when planning interventions in the aftermath of a community-wide disaster or terrorism event. The severity and diagnostic constellations of symptoms will dictate what treatment or intervention, if any, is needed. People with mild symptoms may expect fairly rapid resolution of their symptoms and may require fairly simple interventions and/or support, such as appropriate risk communication messages from the media and public health community explaining that these symptoms are normal, expected reactions to the experience of a traumatic event. The minority of people with severe symptoms and/or psychiatric illness may require conventional treatment from the mental health system. This highlights the need for coordination and collaboration between the public health and mental health communities in order to address the needs of diverse populations across the spectrum of symptoms and manifestations.

Traumatic Events in Children and Adolescents

The childhood experience of traumatic events induces immediate biological and psychological reactions, some of which may persist for an ex-

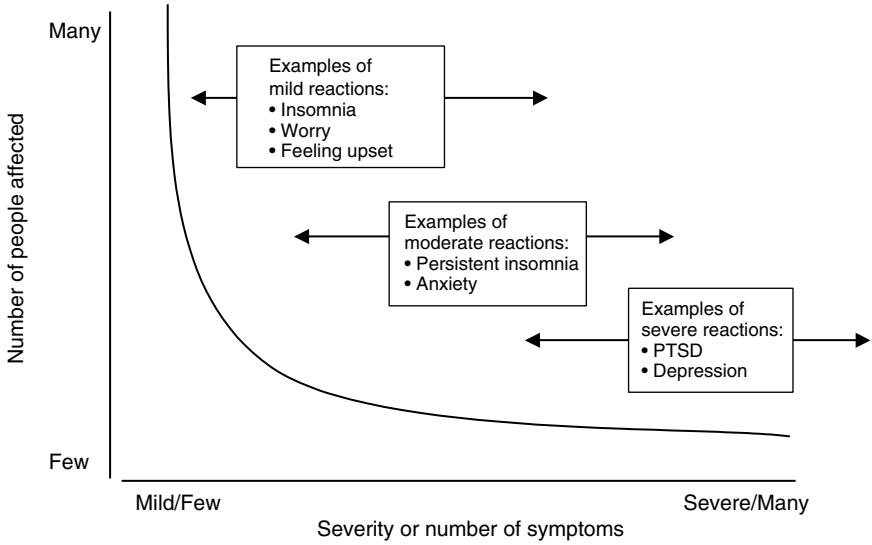

FIGURE 2-1 Severity of psychological reactions experienced by the population following a traumatic event.
NOTE: Indicative only.

tended period. The psychological symptoms of traumatic events in children and adolescents are similar to those recognized in adults, but often appear as age-appropriate expressions of the stressful event. See Box 2-2 for examples of possible reactions of children to traumatic events.

Youth who have been exposed to violence have been more likely to develop psychological problems and have poor functioning at home and school (Cohen, 1998; Pynoos et al., 1995; Richters and Martinez, 1993). Recent studies indicate that about one-third of children exposed to community violence develop PTSD (Berman et al., 1996; Fitzpatrick and Boldizar, 1993). Youth exposed to traumatic events also can develop depression, other anxiety disorders, substance use disorders, and problems with school performance (Brent et al., 1995; Clarke et al., 1995; Saigh et al., 1997; Singer et al., 1995; Weine et al., 1995). Widespread negative psychological effects have also been reported following acts of violence on high school campuses, such as the school shootings at Columbine High School in Littleton, Colorado, and Santana High School in Santee, California.

Biological research has demonstrated that, like adults, children exposed to traumatic events show alterations in stress hormone systems. However, a unique difference among children is the association of exposure to traumatic events with measurable discrepancies in neurophysi-

Box 2-2
Possible Reactions to Traumatic Events of Children

Children 5 years and younger may

- have a persistent fear of being separated from parents or caregivers or be excessively clingy
- cry, whimper, or scream
- have problems sleeping or have nightmares
- have regressive behavior (a return to behavior that is not appropriate for their age, such as bedwetting, thumb sucking, or being afraid of the dark

Along with the reactions above, children 6 to 11 years old may also

- withdraw from other people and everyday activities
- wct out with disruptive behavior, such as misbehaving at home and school in ways that are not typical for the child
- have difficulty concentrating and paying attention
- have irrational fears
- be irritable
- have outbursts of anger and fighting
- become depressed, anxious, have feelings of guilt, or become emotionally numb
- get lower grades at school

Along with the reactions above, adolescents age 12 to 17 years old may also

- have flashbacks
- avoid any reminders of the traumatic event
- abuse drugs such as alcohol
- have suicidal thoughts

SOURCE: Pace and Glass (2000). *Journal of the American Medical Association,* 284: 654.

ological development. It is believed that prolonged levels of significant stress may adversely affect the neurophysiological development of young children in ways that may have long-term consequences for behavioral responses to stress and later psychiatric illness (for reviews, see De Bellis, 2001; Glaser, 2000). It is difficult to draw definitive conclusions from this research, however, since findings are frequently confounded with preexisting risk factors for experiencing a traumatic event that are also associated with differences in brain physiology.

DISASTERS

A subset of the broader trauma literature has focused on the psychological consequences of disasters. Disasters differ from other forms of traumatic events in that, by definition, they are likely to affect larger segments of the population or entire communities of individuals, causing widespread destruction and distress.

Spectrum of Consequences of Disasters

Comprehensive reviews of the literature have consistently revealed a wide range of adverse outcomes following disasters (see, for example, Katz et al., 2002; Norris et al., 2002b; Rubonis and Bickman, 1991; Solomon and Green, 1992). Results of a review of 49 research articles and books conducted by Solomon and Green (1992) revealed that most authors reported negative psychological consequences of disasters. Norris and colleagues (2002b) reviewed 177 articles that examined 80 different disasters.[1] The authors organized the most frequently documented negative sequelae of disasters into five categories:

- Specific psychiatric illnesses (for example, PTSD, depression)
- Nonspecific distress (symptoms without a specific diagnosis, such as demoralization, perceived stress, and negative affect)
- Health problems and concerns (for example, somatic complaints, sleep disruption, increased use of sick leave)
- Chronic problems in living (for example, social disruption, family conflict, financial and occupational stress)
- Psychosocial resource loss (for example, decreases in social participation and perceived support)

The authors suggest that children were the segment of the population at greatest risk for psychological trauma, behavioral changes, and impairment. Research suggests that disasters experienced at a younger age may have long-term psychological consequences. One study followed a group of adolescents who experienced the sinking of a ship, and found that more than a third of those adolescents who developed PTSD subsequent to the disaster still had PTSD at either five or eight years follow-up (Yule et al., 2000).

[1] Norris et al. (2002a, 2002b) included in their sample disasters due to "mass violence." These types of disasters comprised 9 percent of their sample, and may include acts of terrorism.

It is important to note that many psychological reactions to disasters are considered ordinary responses to stress. For example, almost half of the survivors of an earthquake in Northridge, California, exhibited distress symptoms of reexperiencing the disaster and hyperarousal, but these symptoms alone were not associated with psychiatric illness and were considered "normal" (McMillen et al., 2000). Regardless of psychiatric illness, it is critical to consider functional impairment when evaluating the psychological consequences of a disaster or other traumatic event. Box 2-3 presents examples of other ordinary and expected psychological responses to a disaster.

In addition to psychiatric illness and distress reactions, experiencing a disaster may result in alterations in health-related behaviors and produce general life changes. Substance use is one health-related behavior commonly thought to increase in the aftermath of a disaster. Cigarette smoking and alcohol use may increase in individuals with PTSD after any kind of traumatic event (Shalev et al., 1990). In their extensive review of disaster studies, Norris and colleagues (2002b) observed increased substance use in 25 percent of the populations under study. However, increased substance use does not necessarily develop into substance use disorders, and Katz and colleagues (2002) noted that only a small number of studies have looked at substance use as an outcome. Family interactions constitute another area of behavior that may be influenced by disasters. For example, Adams and Adams (1984) found increased domestic violence and family problems in a population of survivors of the Mount Saint Helens eruption. Family relationships and other social variables are an area not as frequently studied as other areas discussed here and are in need of further investigation.

Evidence suggests that adverse psychological consequences of disaster dissipate over time for the majority of people. The studies included in Norris and colleagues' review suggested that symptoms measured shortly after the disaster were predictive of symptoms at subsequent points in time, and the greatest severity of symptoms was usually experienced within one year following the disaster; only a minority of disaster survivors had any significant and persistent impairment after the first year.

Moderators of Adverse Outcomes After Disasters

As discussed, many of the initial reactions to disasters can be considered ordinary distress responses to traumatic events and the symptoms will dissipate over time. Thus, in order to intervene appropriately, it is important to be able to predict which individuals may experience long-term and serious consequences and to estimate the number of individuals that may be affected. Predictors of long-term impairment after a di-

Box 2-3
Examples of Reactions of People Who Experience Traumatic Stress

Thoughts

Common
- Recurring dreams or nightmare about the disaster
- Reconstructing the events surrounding the disaster in your mind, in an effort to make it come out differently
- Difficulty concentrating or remembering things
- Repeated thoughts or memories of the disaster, or of loved ones who died in the disaster, that are hard to stop

Less Common
- Questioning your religious or spiritual beliefs

Feelings

Common
- Experiencing fear and anxiety when things remind you of the disaster, particularly sounds and smells
- Feeling a lack of involvement or enjoyment in everyday activities
- Feeling depressed, blue, or down for periods of time
- Feeling bursts of anger or intense irritability
- Feeling a sense of emptiness or hopelessness about the future

Less Common
- Feeling numb, withdrawn, or disconnected

Behaviors

Common
- Being overprotective of your and your family's safety
- Becoming very alert at times and startling easily
- Having problems getting to sleep or staying asleep
- Having increased conflict with family members
- Being tearful and crying for no apparent reason

Less Common
- Isolating yourself from others
- Avoiding activities that remind you of the disaster, avoiding places or people that bring back memories
- Keeping excessively busy to avoid thinking about the disaster and what has happened to you

SOURCE: Jacobs (2000).

saster include many of those observed in other traumatic events. Moderators of adverse outcomes have been categorized into pre-event, event, and post-event phases that are consistent with the event phases described in Chapter 1.

Pre-Event. Female gender has been associated with poorer outcome following disasters, as has low socioeconomic status and minority status. The risk of PTSD after a disaster is also increased by the presence of a predisaster history of psychiatric illness (Smith et al., 1990; Yehuda, 2002) and particularly by a history of depression (Shalev et al., 1998). However, Bromet et al. (1982) found no significant difference in mental health outcomes between patients with a psychiatric illness who experienced the Three Mile Island disaster and a control group.

Event. Traditionally, mental health research has classified disasters into two categories: natural and human-caused[2] (the latter includes technological disasters such as hazardous materials spills, aviation disasters, terrorism, and even acts of war) (see Figure 2-2).

Although these categories are not always mutually exclusive, as demonstrated in Figure 2-2,[3] there is some evidence to suggest that individual responses to disaster may vary depending on the type of event. While research in this area has typically examined natural disasters versus human-caused disasters, there is no consensus regarding which events may produce a specific type of response. For example, North and Smith (1990) suggested, based on a review of the disaster literature, that human-caused disasters may result in higher rates of diagnosable psychiatric illnesses, and others have reported that human-caused disasters result in more persistent psychopathology (Baum, 1990; Green et al., 1990; Solomon and Green, 1992). Conversely, Rubonis and Bickman (1991) concluded in their review of 52 studies that human-caused disasters resulted in less severe psychopathology[4] than natural disasters.

As shown in Figure 2-2, a distinction can be made between inadvertent human-caused disasters such as those caused by error or neglect and

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[2] Other typologies categorize disasters differently. One alternative uses three categories: natural events, technological events, and willful human acts including terrorism.

[3] An example of a disaster that would fall into the area of overlap between human-made and natural disasters is the 1972 Buffalo Creek Flood. This disaster was caused by a combination of heavy rains and poorly constructed dams. For a discussion of the "blurring" between the distinctions of naturally occurring and human-made disasters, see Weisaeth (1994).

[4] *Psychopathology* was defined as any psychological problems, pathologies, or impairment suffered by victims of disasters.

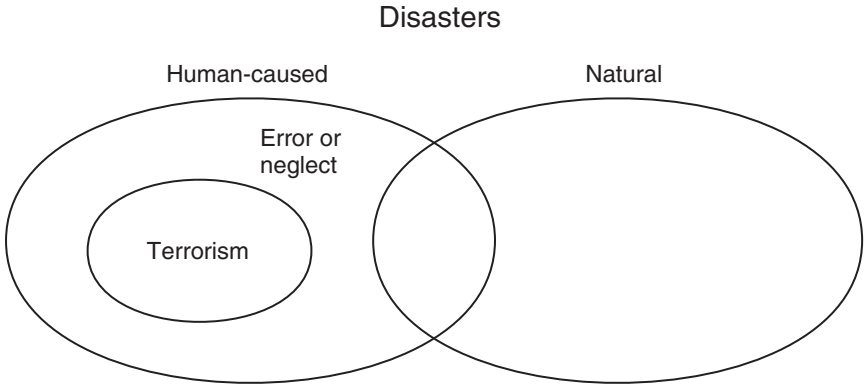

FIGURE 2-2 Categories of disaster.
SOURCE: Ursano (2002).

intentional human-caused disasters such as those due to terrorism or mass violence. These two types of human-caused disasters may each lead to different types and severity of psychological consequences. However, research examining this issue is limited. The review by Norris et al (2002b) used a slightly different classification by disaster type with three categories: natural; technological (for example, oil spills, transportation accidents); and mass violence (for example, shooting sprees, mass suicides, terrorism). Mass violence events were significantly more likely to result in severe impairment in the populations under study than either technological or natural disasters. Therefore, although research shows that all types of disasters, including intentional and inadvertent human-caused disasters, may cause psychological distress, behavior change, or psychiatric illness to different degrees, additional studies should identify the mechanisms and specific characteristics leading to adverse outcomes.

Norris and colleagues (2001) propose that when at least two of the following four characteristics of disasters are present, the mental health impact will be greatest:

- Widespread damage to property
- Serious and ongoing financial problems
- Human error or human intent that caused the disaster
- High prevalence of trauma (injuries, threat to life, loss of life)

With the exception of "serious and ongoing financial problems," these important characteristics of disaster experiences are specific to the event phase. Understanding how specific aspects of disasters relate to specific

outcomes will help facilitate planning for mental health interventions in the aftermath of disasters.

Post-Event. The presence or absence of psychosocial support is significantly associated with outcomes. When people feel that they have been neglected or forgotten by their government or community, they are more likely to have long-term adverse effects from a disaster experience (Norris et al., 2002b). In addition, as mentioned above, ongoing financial stress, job loss, and other post-event negative occurrences are associated with more severe adverse psychological consequences.

Positive Psychosocial Consequences

Although less well documented than the negative effects, the experience of a disaster or other traumatic event may result in a positive impact on both individuals and the community. A small but growing literature exists on the process of posttraumatic growth, describing the development of adaptive coping mechanisms and feelings of self-efficacy following exposure to traumatic events (e.g., Calhoun and Tedeschi, 2001). Thus, the experience of a traumatic event can also promote resilience for future traumatic events.

The communal experience of overcoming a disaster may promote greater community cohesion. Altruism and volunteerism frequently increase in the aftermath of a disaster. These are phenomena that can be beneficial both to those receiving the assistance and to those who volunteer, since the perception of self-efficacy and the ability to "do something" can help people to cope with the disaster experience.

TERRORISM

Terrorism, a subset of human-caused disasters (Figure 2-2), can have a particularly devastating impact on psychological functioning. Terrorism carries with it a potentially greater impact than other disasters on distress responses, behavioral change, and psychiatric illness by virtue of the unique characteristics of terrorism events (see Table 2-1).

Terrorist attacks, and the threat of a terrorism event, may also result in more severe psychological consequences than other types of traumatic events due to a perceived lack of control. Perceptions of risk are influenced by the degree to which individuals feel they have knowledge of and control over an outside event and how familiar and catastrophic the event will be (for review, see Slovic, 1987). People are more likely to feel that an activity or event is not dangerous if they can control it. Under these circumstances, it becomes less effective to cope by distancing

TABLE 2-1 Characteristics of Disasters of Different Etiologies

	Etiology		
		Human-Caused	
Characteristics	**Natural**	**Error or Neglect**	**Terrorism**
Intent	Not present	Not present	Present intended to threaten and/or incite fear
Predictability	Possibly, where disasters are cyclic in nature	Possibly, where there is a hazard site	Largely unpredictable; possible where there is a target of symbolic value
Preventability	May not be possible, but warning may limit impact	May be possible with training and vigilance	May be possible with security and monitoring of terrorist activity
Societal disruption of normalcy and safety			
Local	Present	Present	Present
General	May be present	May be present	Present
Resultant sense of vulnerability	Present	Present	Present
Impact on emergency providers			
Directly involved	Present	Present	Present
Indirectly involved	May be present	May be present	Present
Impact on special groups	May be present	May be present	Present
Emergency, medical, public health, and psychological management			
Pre-event preparedness	Necessary	Necessary	Necessary
Event response	Necessary	Necessary	Necessary
Post event recovery	Necessary	Necessary	Necessary

oneself from the population at risk if the risk is seemingly random. For example, the degree of public anxiety resulting from the 2001 Washington, D.C., area sniper attacks was much greater than the anxiety levels related to the violence that is endemic to many Washington, D.C., areas. The event affected many people in the region for weeks. It was easier for people to distance themselves from urban violence (which is controllable by staying away from urban centers) than from the sniper attacks that were perceived as more threatening and random than everyday shootings.

In addition to its distinctive characteristic of intent, terrorism can uniquely disrupt societal functioning. Terrorism has the capacity to erode the sense of community or national security; damage morale and cohesion; and open the racial or ethnic, economic, and religious cracks that exist in our society, as evidenced by an increase in hate crimes following the September 11, 2001, attacks (Human Rights Watch, 2002; FBI, 2002).

Spectrum of Consequences of Terrorism

Following a terrorism event, most people will experience stress-related symptoms across the spectrum of psychological responses as illustrated earlier in Figure 2-1. Many of the psychological consequences of terrorism are similar to those seen in the aftermath of other disasters. However, the literature specific to the psychological sequelae of terrorist attacks is much more limited in both prevalence and detail than that related to other types of disasters. Similar to research in the broader trauma field, most of these studies have focused on PTSD or symptoms of PTSD as outcomes. Less is known about other, nonpathological outcomes. It is often difficult to compare studies because of the use of varying and previously unvalidated measurement instruments. Furthermore, the significance of selected PTSD symptoms for determining longer-term functioning is unclear. Methodological issues regarding this line of research are discussed further at the conclusion of this chapter. A review of the psychological consequences of terrorist attacks by Gidron (2002) found six studies that met his criteria for inclusion.[5] In this review, Gidron calcu-

[5] These criteria were: inclusion of subjects who were direct victims of terrorist attacks (terrorist attack defined as a "deliberate human-made violent event with a political motive"); subjects assessed with reliable PTSD instruments or with instruments based on DSM criteria; studies published in English between 1980 and 2001. The six studies that met the criteria were: Abenhaim et al., 1992; Amir et al., 1998; Curran et al., 1990; Shalev, 1992; Trapler and Friedman, 1996; Wilson et al., 1997. A summary of results from each of these studies can be found in Table 2-2.

TABLE 2-2 Sample of Research on Psychological Consequences of Terrorism Events

Event	Year	Morbidity or Outcome	Reference
New York City (NYC) and Arlington: World Trade Center and the Pentagon	2001	7.5% of NYC residents had symptoms of acute PTSD, and 9.7% had depression at 5–8 weeks after attacks; 20% of those closest to the attack site had symptoms of acute PTSD	Galea et al., 2002
		Utilization rates of antianxiety medications were significantly higher than expected during October 2001. No significant effects were seen for antidepressant medication utilization	McCarter & Goldman, 2002
		44% of a nationally representative sample reported one or more "substantial stress symptom"	Schuster et al., 2001
		Rate of "probable PTSD" higher in NYC (11.2%) than elsewhere in the US (4%) 1–2 months after attacks	Schlenger et al., 2002
		17% of a nationally representative sample reported symptoms of posttraumatic stress 2 months after the attacks; 5.8%, at 6-month follow-up	Silver et al., 2002
		9.7% of Manhattan residents reported an increase in smoking, 24.6% reported an increase in alcohol consumption, and 3.2% reported an increase in marijuana use 5–8 weeks after the attacks	Vlahov et al., 2002
Israel: attack on women on bus	1996	27% diagnosed with PTSD after treatment intervention consisting of group debriefing with brief group psychotherapy	Amir et al., 1998

TABLE 2-2 Continued

Event	Year	Morbidity or Outcome	Reference
Oklahoma City: bombing	1995	Fear during event and feeling that treatment was helpful were associated with higher risk of PTSD among adults seeking help	Tucker et al., 2000
		Children, especially girls, who knew someone who died or who was injured in the bombing had more severe PTSD symptoms than those that did not know victims	Peak, 2000
		45% of sample of survivors of direct blast had one or more psychiatric illnesses; 34% had PTSD	North et al., 1999
		Degree of television and emotional exposure was associated with posttraumatic stress symptoms among middle school students	Pfefferbaum et al., 2001b
Tokyo, Japan: sarin gas released in subway	1995	Somatic and psychological symptoms present at 2-, 3-, and 5-year follow-up	Kawana et al., 2001
		8 of 34 victims developed PTSD after the attack	Tochigi et al., 2002
		Symptoms of distress present in exposed individuals at 1-, 3-, and 6-month follow-up	Ohbu et al., 1997
NYC: shooting at van of Hasidic Jews	1994	4 of 11 survivors diagnosed with PTSD and comorbid major depression	Trappler & Friedman, 1996
Ireland: various terrorism events	1993–1994	5% of police officers exposed to terrorist-related critical incidents had PTSD at 7–10-month follow-up	Wilson et al., 1997

continued on next pagee

TABLE 2-2 Continued

Event	Year	Morbidity or Outcome	Reference
Israel: attack on civilian bus	~1990	33% of sample had PTSD at 10-month follow-up. Early PTSD symptoms were not predictive of later diagnosis	Shalev, 1992
Enniskillen, Ireland: bombing	1987	50% of sample had PTSD at 6-month follow-up. There was no correlation with the degree of physical injury. More females than males had PTSD	Curran et al., 1990
France: various terrorism events	1982–1987	PTSD present in 10.5% of uninjured victims, 8.3% of moderately injured, and 30.7% of severely injured. Overall, 13.3% were diagnosed with major depression. No gender differences	Abenhaim et al., 1992
Chowchilla, CA: school bus kidnapping	1976	All of the 23 children in the kidnapping exhibited symptoms of posttraumatic stress at 5–13 months, and at 4 years follow-up. Brief treatment at 5–13 months did not prevent later symptoms	Terr, 1981; 1983

lated the rate of PTSD for those who were directly exposed to a terrorist attack to be 28.2 percent. Given that the terrorist attacks on the World Trade Center and the Pentagon on September 11, 2001, in addition to directly impacting thousands of people, may have had more than 100,000 direct witnesses (Schuster et al., 2001) and that millions across the country experienced the events through repeated media depictions, it can be presumed that the impact of these events was quite significant. Table 2-2 presents significant findings from a selected set of studies examining a range of terrorism events.

Studies taking place outside of the United States have frequently used similar designs to those within the United States, often focusing on PTSD or symptoms of PTSD. Although limited in number, these international research efforts add useful information to the knowledge-base on psychological consequences of different types of terrorism events. In general, findings regarding the psychological sequelae of terrorist attacks are simi-

lar to those seen in United States–based studies; commonly reported effects include PTSD and symptoms of PTSD, major depression, and general psychological distress as determined by various measures. Some of these studies also provide unique perspectives because they have been carried out on populations that have been exposed to varying forms of terrorism events such as smaller-scale bombings and shooting attacks (e.g., Abenhaim et al., 1992; Wilson et al., 1997) and a chemical attack (Kawana et al., 2001; Ohbu et al., 1997; Tochigi et al., 2002), while much of the body of research from the United States has focused on large explosive attacks.

Two of the most significant acts of terrorism in the United States, the 1995 Oklahoma City bombing and the attacks of September 11, 2001, prompted a small, but growing, literature on psychological consequences of terrorism in this country. Research on the Oklahoma City bombing revealed PTSD in approximately one-third of survivors of the direct bomb blast six months after the bombing, and nearly three-fourths of these were individuals with no prior history of PTSD (North et al., 1999). North and colleagues (1999) identified a specific constellation of symptoms that was highly predictive of PTSD. Avoidance and numbing symptoms were much more common among Oklahoma City bombing survivors with PTSD. In contrast, the symptoms of intrusive reexperience and hyperarousal were "nearly universal" among survivors and were not predictive of PTSD when occurring by themselves.

Several studies conducted after the Oklahoma City bombing focused on an adolescent population from the Oklahoma City Public School District. More than 40 percent of the middle school students who participated in one survey reported that they knew someone who was injured in the bombing, while more than 30 percent knew someone who was killed. Seven weeks after the bombing, 14.6 percent of the youth reported not feeling safe and 34.1 percent reported worrying about themselves or their families (Pfefferbaum et al., 1999). This survey of middle school students also found that television and emotional exposure to the terrorism event was associated with posttraumatic stress symptoms (Pfefferbaum et al., 2001b). School officials in Oklahoma City reported a 25 percent decrease in attendance in the first weeks following the bombing. Students' initial apprehension about returning to school was shared by parents who sought evidence of better protective measures (Wong, 2001). Teachers and school administrators became concerned about their ability to identify future perpetrators and to ensure the safety of students and staff.

A number of authors have investigated the impact of the terrorist attacks of September 11, 2001, on the United States population in general and on New York City residents specifically. Galea and colleagues (2002) examined PTSD symptoms in New York City residents one to two months

after the attack. Results indicated that 7.5 percent of Manhattanites reported criterion symptoms of PTSD that were then used to estimate the prevalence of the disorder, while 20 percent of those near the World Trade Center at the time of the attacks reported such symptoms. Schlenger and colleagues (2002) studied a nationally representative cross-sectional sample one to two months after the attacks using self-reported symptoms of PTSD and general psychological distress to measure what they termed "probable PTSD." They found that residents of the New York City metropolitan area had the highest rate of probable PTSD in the country at 11.2 percent; the rate in the Washington, D.C., metropolitan area was 2.7 percent, in other major metropolitan areas 3.6 percent, and across the rest of the country 4.0 percent. A similarly designed nationally representative study by Silver and colleagues (2002) found that two months after the attacks, 17 percent of the country (not including those residing in New York City) had symptoms of September 11th–related posttraumatic stress, while at six months, this number decreased to 5.8 percent. The discrepancy between the rates found by these two studies (4 percent versus 17 percent) likely reflects the different methodologies and populations used to estimate posttraumatic stress. In a national telephone survey conducted immediately after September 11, 2001, Schuster et al. (2001) measured the presence of various symptoms of distress responses. The symptoms reported by adults included feeling very upset when reminded of the events (30 percent), having trouble falling or staying asleep (11 percent), and feeling irritable (9 percent).

A large study commissioned by the New York City Board of Education examined the psychological consequences of the September 11, 2001, terrorist attacks on 8,266 public school students in grades 4–12 throughout the five boroughs of New York City six months after the attacks (Hoven et al., 2002). Results indicate widespread distress responses and symptoms of psychiatric illness that were not limited to students in proximity to the World Trade Center. Prevalence rates of symptoms such as those related to PTSD, generalized anxiety disorder, and separation anxiety were significantly higher than would be expected in children not exposed to a traumatic event. However, because pre-event baseline data are not available for the children surveyed, it is difficult to ascertain whether these findings reflect exposure to the terrorism event or other features of the population.

Similar to findings in the disaster mental health literature, some evidence indicates that terrorism events may lead to increases in substance use. One survey of residents of New York, Connecticut, and New Jersey found that 21 percent of cigarette smokers reported an increase in smoking after the attacks (Melnik et al., 2002). Similarly, Vlahov and colleagues (2002) reported increases in substance use, including alcohol, in New York

City and the surrounding areas in the months after September 11, 2001. In comparison, a study of survivors of the Oklahoma City bombing found no new cases of diagnosable substance use disorder subsequent to the attack (North et al., 1999). It is important to make a distinction between increases in substance use and substance abuse. Data indicating a simple increase in alcohol or tobacco use do not necessarily indicate problematic or long-standing behavior changes.

Other behaviors and outcomes reflecting functional impairment after terrorism events are in need of further study. School dropout rates, divorce, and domestic or interpersonal violence and conflict are potential future research topics in this area. Increases in school or work absenteeism, which may indicate functional impairment, have been noted following terrorist attacks. A survey by Melnik and colleagues (2002) found that 27 percent of respondents who were working in New York City at the time of the September 11, 2001, attacks missed work in the following days. This was due primarily to transportation problems caused by increased security measures such as surveillance of bridges and tunnels leading into Manhattan. Increased absenteeism from work or school has also been reported after other violent events. For example, during the serial sniper attacks in the Washington, D.C., metropolitan area in October 2002, a significant increase in school absences occurred, with attendance rates as low as 10 percent at several elementary schools near one of the shooting sites (Schulte, 2002). However, this behavior may be considered an appropriate response rather than a distress response because one of the victims of the sniper was a child who was shot while walking from a car into a school. A similar distinction can be made when looking at behavioral responses to the anthrax attacks of 2001. An average citizen using gloves to open mail may have been considered to manifest an adverse behavioral change related to psychological distress. However, if the person was a staff member in one of the offices specifically targeted in the anthrax mailings, the use of gloves might be considered an appropriate response.

Health care seeking by individuals who are not actually at risk or injured, but seek health care due to fear and anxiety, has been observed in response to terrorism events. This phenomenon was noted following the sarin poisoning in the Tokyo subway and during the anthrax attacks in the fall of 2001 when tens of thousands of people who were not at risk for exposure obtained prescriptions for the antibiotics ciprofloxacin and doxycycline (Shaffer et al., 2003). Accurate and timely risk communication becomes particularly important in limiting the potential stress on the health care system because unaffected individuals flood services. This type of behavior is most likely to occur in the event of chemical, biological, radiological, or nuclear attack and is discussed further below in the section detailing the consequences of these types of terrorism.

Moderators of Adverse Outcomes after Terrorist Attacks: Identifying Vulnerable Populations

Research from the disaster mental health field has developed models that stratify groups based on exposure level. These levels include those *indirectly or remotely affected*—individuals who are not in close geographic proximity to the incident, but who witness the event through the media; those who are negatively exposed through secondary effects such as an economic downturn; and those who experience the death of or immediate risk to a loved one from the terrorism event (i.e., relatives, friends, coworkers, rescue workers, witnesses). The populations that will be directly affected may vary according to the type of event (e.g., bombing; hijacking; chemical, biological, radiological, or nuclear attack). For example, a biological attack on the U.S. food supply may have a direct impact on agricultural workers through both physical and economic effects, and the resulting disruption may have an indirect impact on society as a whole. Given the large number of individuals, from those remotely to those directly exposed, who may be affected by a terrorism event, it is important to recognize variations among these exposed subpopulations in order to identify those who are most vulnerable to the psychological consequences of the event. This will allow for the focus of limited resources on prevention and intervention for those most in need.

Virtually all members of communities affected by terrorism are vulnerable to negative psychological outcomes. The type of vulnerability may vary substantially and may not always be obvious. Diverse variables that may enhance the prediction of adverse outcomes following a terrorism event are presented below in pre-event, event, and post-event temporal categories.

Pre-Event. Shalev (2001) reviewed a previously conducted meta-analysis examining predictors of adverse outcomes for traumatic events in general and concluded that preexisting factors have less influence on an individual than the disaster itself and subsequent factors such as community support. Some models of response propose that the impact of pre-existing factors is confounded with the dose of exposure; when the dose is less, the impact of pre-existing factors is more evident, and as the magnitude of the event increases, pre-event characteristics become less important. Regardless, these preexisting factors are useful to consider when planning service delivery because they allow for a better understanding of those who may be at increased risk and require particular attention.

Gender, age, experience, and personality have all been implicated in moderating adverse outcomes. Female gender has been associated with worse short-term outcomes in a number of studies of the general popula-

tion after September 11, 2001 (e.g., North et al., 1999; Schlenger et al., 2002; Silver et al., 2002). Prior marital separation and preexisting physical illness have also been implicated in predicting greater psychological distress after these events (Silver et al., 2002).

As in studies of disasters, the pre-event experience of traumatic events may be related to psychological consequences following terrorism events. For example, the investigation of New York City public school students after September 11, 2001, found that nearly two-thirds of the students surveyed reported one or more prior traumatic events such as seeing someone killed or seriously injured and experiencing the violent or accidental death of a family member. In this sample, a history of prior traumatic events was associated with significantly increased rates of symptoms consistent with PTSD (Hoven et al., 2002). It is difficult, however, to discern the relative contributions of the prior traumatic events and the actual terrorism event to the reported symptoms given the lack of pre-event baseline data in this population.

Age has been identified as possibly moderating psychological responses to terrorism. While several studies examining adult populations have found no significant influence of age on the severity of psychological responses to terrorist attacks (e.g., Abenhaim et al., 1992), the psychological impact of terrorist attacks on children and adolescents is frequently noted as an area of concern as described above. One study reported that students in the fourth and fifth grades were significantly more likely than those in grades six through twelve to endorse symptoms consistent with PTSD after the September 11, 2001, terrorist attacks (Hoven et al., 2002). Further research is needed to determine if children and adolescents are at greater risk for psychological consequences than adults.

The disaster literature has also identified ethnic and racial minority status as a potential moderating factor on adverse outcomes. Norris and colleagues (2002b) reviewed studies that included ethnicity as a variable and found that among adults, ethnic majority groups had better outcomes after disasters than minorities in all of the samples. Among youth, however, the results were more variable. The research base examining racial and ethnic minority status as a factor predicting outcomes to terrorism events is extremely limited, although a few studies provide some indication. For example, Galea et al. (2002) found that Hispanic ethnicity predicted symptoms consistent with both PTSD and depression among Manhattan residents after the September 11, 2001, terrorist attacks. Similar results were found among New York City public school students after those attacks; Hispanic students were more likely than either African-American, white, or Asian students to have symptoms of PTSD (Hoven et al., 2002).

Findings from the disaster mental health literature have indicated that first responders and rescue workers are a population at risk for adverse psychological outcomes after responding to disasters (e.g., Duckworth, 1986; Jones, 1985; Weiss et al., 1995), likely due to their direct and often ongoing exposure to traumatic experiences. Findings after terrorism events reveal similar results. One study of New York City Fire Department rescue workers found a seventeenfold increase in stress-related incidents (e.g., depression, anxiety disorders, bereavement issues) during the 11-month period following the September 11, 2001, attacks as compared to the 11-month period preceding the attacks (Banauch et al., 2002). These data, however, may not represent the typical experiences of first responders and rescue workers because of the deaths of so many fellow firefighters in the immediate aftermath of the attacks. North and colleagues (2002b) found a PTSD rate of 13 percent among rescue workers in Oklahoma City. PTSD was associated with more days spent working at the site and more time spent in the central bombing pit. However, this study compared rescue workers to primary victims of the bombings and found that PTSD was significantly lower among rescue workers. The authors speculated that this may be related to characteristics of rescue workers such as preparedness, experience with job-related traumatic events, and self-selection for the type of work, as well as lower injury rates among rescue workers and exposure to education and debriefing aimed at mitigating psychological consequences (North et al., 2002b).

Event. While it is clear that certain populations may be particularly vulnerable to adverse outcomes following a terrorism event, there are factors related to the event itself that may affect the degree of impact. Findings from the disaster and other trauma literature have suggested that the duration and intensity of exposure to the traumatic event, including indirect exposures such as traumatic grief and loss, are some of the most important predictors of an adverse impact on subsequent functioning. Evidence suggests that terrorism events are similar to other traumatic events in this regard. As described earlier, psychological consequences will vary across the population in relation to the quality and extent of exposure: some people will experience direct physical trauma or threat of trauma; others, such as family members and friends, will experience grief and loss; and a wider population will be affected by secondary adversities and a general climate of fear. Silver and colleagues (2002) found that the degree of exposure to the September 11, 2001, attacks (as measured by a composite of proximity to the various attack sites, presence at a site, contact with a victim whether visually or by phone during the attacks, and degree of watching the events live on TV) was significantly predictive of psycho-

logical distress, more so than the degree of loss,[6] although both exposure and degree of loss were associated with distress. Similarly, Schlenger et al. (2002) suggested that the amount of time spent watching television coverage predicted both PTSD symptomatology and general distress, although these authors were careful to note that this association did not necessarily imply causation (e.g., more symptomatic people could have been drawn to watching the television news coverage). See Box 2-4 for additional information on the role of the media during terrorism events.

Other important event-related characteristics include the duration and type of attack. Unlike other disasters, terrorism events may manifest as a single massive attack (e.g., Oklahoma City bombing), multisite event (e.g., events of September 11, 2001), multisite continuous or repeated events (e.g., anthrax attacks of 2001), or continuous or repeated events (e.g., terrorist attacks in Northern Ireland) (Ursano, 2002). The mechanism or type of attack also may moderate outcomes. Biological and radiological attacks may involve considerable on-going exposure to the threat and delayed emergence of physical symptoms, while an attack with conventional explosives will likely be a discrete event with obvious and more immediate injuries. The effects of cyberterrorism events, which have not been adequately studied, are largely unknown. These characteristics of terrorism events can determine the degree of population exposure, and the severity and magnitude of psychological consequences.

Hoaxes and copycat events may initially result in psychological consequences similar to those of actual terrorism events. Although the research base is extremely limited, the psychological impact of a hoax may be as great as that of a true threat. For example, Dougherty, et al. (2001) examined the psychological impact on victims of two incidents of anthrax threats that were later determined to be hoaxes and found evidence of distress symptoms. Results revealed that victims frequently reported a number of posttraumatic stress symptoms even after the hoax was announced. A similar relationship with adverse psychological consequences may exist with false alarms for terrorism events, although research in this area is also limited. False alarms and warnings that are given to people not at risk have implications for future preparedness and response since a "cry-wolf" syndrome may result in which people become less responsive to future warnings (NRC, 2002b).

Post-Event. A number of post-event factors may also help identify those at increased risk for negative psychological outcomes. The investigation

[6] Severity of loss was assessed using a 6-level continuum, with 0 indicating no loss; 1, property loss of someone close; 2, personal loss of property; 3, injury of someone close; 4, death of someone close; and 5, personal injury in the attacks.

Box 2-4
Role of the Media During Terrorism Events

Speculation about the communicability of terror through media accounts has increased recently. Some evidence has revealed an association between exposure to media accounts of terrorist acts and psychological symptoms. Pfefferbaum et al. (2001b) studied middle school students about two months after the bombing in Oklahoma City and reported a correlation between television exposure and posttraumatic stress symptoms. Another survey found that among children whose parents did not limit television viewing after the attacks of September 11, 2001, there was an association between the number of stress symptoms reported and the number of hours of television watched (Schuster et al., 2001). The correlations may indicate that individuals experiencing greater stress were drawn to watching more television or that watching more television led to more symptoms of stress; alternatively, there may be no cause–effect relationship whatsoever. Research has demonstrated that increased awareness of possible symptoms of a disease or exposure to a harmful agent may increase reporting of those symptoms, independent of any actual disease or exposure (e.g., Winters et al., 2003).

The media have the opportunity to play a significant positive role in the community. The media have an implicit responsibility to keep the public informed about current events and can help relay messages in the most efficient and effective way. They can also serve the role of providing reassurance and comfort to people in a time of confusion and uncertainty. For example, after the September 11, 2001, terrorist attacks, the media assisted in letting people know where to give blood, volunteer, or make other donations; providing numbers to call for airlines and businesses in the World Trade Center towers; and broadcasting messages from public officials.

by Galea and colleagues (2002) examining residents of Manhattan after the September 11, 2001, terrorist attacks found that post-event factors predicting PTSD symptoms included panic attack during or shortly after the attacks, and loss of possessions due to the attacks. Similarly, post-event factors predicting depression included panic attack during or shortly after the attacks, death of a friend or relative during the attacks, and job loss due to attacks.

Although many people will exhibit some manifestation of distress in the aftermath of a terrorism event, several specific symptoms have been identified as being more predictive of later psychiatric illness. These symptoms include feeling numb, withdrawn, or disconnected; isolation from others; and avoiding activities, places, or people that bring back

memories of the event (North et al., 1999, see also Box 2-3). It may be important to screen for these specific symptoms during the post-event period in order to identify individuals who may require mental health care. The ways in which people cope with the stress of a terrorism event is also predictive of later outcomes. Silver and colleagues (2002) found that those who used active coping[7] had less distress than those who demonstrated denial, defeatism, and self-distraction—indicating disengagement with coping—had greater distress.

Secondary and Community Consequences

Because terrorism, unlike natural disasters or human-caused technological failures, is a purposeful act by an individual or a group of individuals, terrorist acts are often perceived to be perpetrated by a specific ethnic, racial, or religious group. Recently, debate has increased about the controversial practice of profiling based on these characteristics for law enforcement purposes in the identification of potential terrorists. In addition, discrimination or stigmatization of the identified racial, ethnic, or religious group are potential outcomes of such perceptions, and may constitute threats to community cohesion and to the psychological well-being of those who are the targets of discrimination. Community cohesion can decrease as neighbors become suspicious of strangers and of one another. A multiethnic and multicultural population might exacerbate these fears. After the terrorist attacks on September 11, 2001, the number of hate crimes against Arabs, Muslims, and those perceived to be Arab or Muslim rose sharply (Human Rights Watch, 2002). Violent acts included murder, physical assaults, arson, vandalism of places of worship and other property damage, death threats, and public harassment. Most of these incidents occurred between September 11, 2001, and December 2001. According to Federal Bureau of Investigation (FBI, 2002) statistics, the number of anti-Muslim hate crimes rose from 28 in 2000 to 481 in 2001. Similar increases in the numbers of anti-Muslim hate crimes have been reported in relation to the Oklahoma City bombing, the crash of TWA Flight #800, and the Persian Gulf War (Human Rights Watch, 2002).

In contrast, terrorism events, like other disaster events, can also produce unique positive outcomes for the community. Because terrorism is generally directed at a population or subpopulation, there is often a sig-

[7] Active coping strategies are behavioral or psychological responses intended to change the nature of the stressor itself or the way in which one thinks about it. Turning to others for support and attempting to gain more information about the stressor are examples of active coping strategies.

nificant growth of patriotism and pride for the population following the event. For example, after the terrorism events on September 11, 2001, many people reported an increased appreciation for the freedom afforded by living in the United States (Silver et al., 2002). People also reported closer relationships with their family members subsequent to those attacks (Silver et al., 2002).

Chemical, Biological, Radiological, and Nuclear Terrorism

Chemical, biological, radiological, and nuclear terrorism (CBRN) deserves special mention, given the unique characteristics. Such threats are unfamiliar, usually undetectable while they are dangerous, and often perceived as particularly reprehensible and unfair. These qualities present additional psychological challenges. The presence of an "incubation period" in which an individual may have been exposed to an agent but may not know the outcome is another unique and potentially stressful aspect of CBRN terrorism. In the case of a bombing or other physical terrorist attack, the individual will know immediately whether or not he or she has been physically harmed.

A particularly difficult challenge that may present in cases of CBRN terrorism is the differentiation of apparent anxiety in people due to the possibility of exposure to a chemical or biological agent from direct neuropsychological or behavioral changes due to exposure to the agent. The initial presentation of a chemical and biological weapon attack may be neuropsychological symptoms. For example, acute poisoning with a sublethal dose of an organic phosphorus compound (e.g., sarin) produces cognitive impairments characterized by confusion, difficulty in concentration, and drowsiness (Jones, 1995); individuals exposed to cyanide may initially present with anxiety and agitation, reflecting tissue hypoxia (Baskin and Rockwood, 2002); and exposure to fungal toxins can result in psychosis, somatic complaints, anxiety, agitation, and involuntary movements (Benedek et al., in press). Furthermore, physical manifestations of panic such as shortness of breath might be mistaken as symptoms of infection or contamination, which then becomes a self-reinforcing cycle as the individual's panic is increased by the shortness of breath, resulting in an exacerbation of this symptom.

Individuals with nonspecific somatic complaints such as nausea or weakness will be a great concern in the event of biological or chemical attacks when the presenting symptoms of exposure may be nonspecific and similar to other common conditions. For example, during the anthrax attacks in fall of 2001, the initial symptoms of infection mimicked viral syndrome and influenza-like symptoms. Many emergency physicians and primary care physicians were overwhelmed with individuals

concerned about their exposure and requesting testing and/or treatment for anthrax exposure, which may or may not have occurred and for which tests were not always available. The extensive publicity about the anthrax threat likely increased self-monitoring for symptoms. This scenario was also seen among the Israeli civilian population during the Gulf War when people went to hospitals concerned that they had been exposed to nerve gas from Iraqi Scud missiles (Golan et al., 1992). The 1995 terrorist attack involving the nerve agent sarin in the Tokyo subway system also illustrated this phenomenon. Almost 75 percent of those who went to the hospital and were reported as "injured" showed no effects of exposure to sarin (Lillibridge et al., 1995). An investigation conducted by Ohbu and colleagues (1997) examined various psychological distress responses in survivors of the sarin gas attack. The individuals reported symptoms such as fear of subways (32 percent), sleep disturbances (29 percent), flashbacks (16 percent), and irritability (10 percent).

RESEARCH CHALLENGES AND NEEDS

Conducting research on the psychological consequences of terrorism and testing interventions in this setting are extraordinarily difficult given the chaos, unpredictability, and other complexities of major disasters. Consequently, studies often have to proceed in the absence of rigorous research methodologies, producing results whose validity may be questionable, unreliable, and not applicable to the disaster setting or population of interest. Furthermore, the length of time typically needed for the approval and dissemination of funding may make it difficult to initiate research soon after a disaster occurs, which then results in findings that do not reflect the full time-course of response and recovery. The need to meet requirements of institutional review boards and other regulatory agencies also contributes to the time needed before commencement of research. Barriers such as these ultimately result in gaps in critical knowledge needed to direct interventions in settings of terrorism.

The model depicted in Tables 1-3, 1-5, and 1-6 is a potentially comprehensive structure for directing future research, and providing a framework for research to recognize and address the gaps. Much has yet to be learned even on the basic epidemiologic level, such as the incidence of psychiatric illnesses in various disaster populations when comparing terrorism with other kinds of events. Researchers use various instruments to measure many different variables so that comparison between studies is difficult if not impossible. Intervention studies are exponentially more difficult to conduct than epidemiologic research because of both the need to enter the field quickly before other interventions have contaminated the course of recovery in the population and the need to apply standard

methods of treatment evaluation such as randomized, double-blind, placebo-controlled studies. Therefore, even less is known about the effectiveness of interventions for traumatic stress following disasters and terrorism. The field has resorted to applying interventions developed for other populations that are untested in disaster settings, some of which may be unhelpful or possibly even harmful. Even more complex than epidemiologic and treatment effectiveness research in disaster settings are studies of community systems of response to disasters and terrorism.

Throughout this chapter, we have highlighted areas where additional and more rigorous research is necessary. These areas include the psychological consequences and response implications of hoaxes and false alarms, and of attacks with conventional explosives or a CBRN weapon such as the release of a highly infectious disease. In addition, research that refines possible population-based predictors of adverse outcomes after terrorism events, including ethnicity, age, and other pre-existing characteristics, is needed to guide future outreach and intervention efforts. Evidence is lacking on substance abuse outcomes after a terrorism event, and on interventions for these behaviors. The role of media images in spreading terror remains unclear, and should be examined as well, so that potentially adverse psychological consequences can be minimized. Finally, the identification of factors that may influence community and individual resilience is required in order to inform future interventions. As noted throughout this chapter, a lack of indicators of the population's psychological health prior to terrorism events limits the conclusions that can be drawn from research conducted after events. Ongoing surveillance will be of benefit in determining the psychological consequences of events and effectiveness of specific interventions.

SUMMARY

The trauma and disaster literature provides some indication of how individuals and communities may react to terrorism events. Research examining the psychological consequences of terrorism, although in its infancy, indicates that psychological difficulties will certainly result for many. Most of those with psychological consequences will present with mild distress symptoms and behavioral changes, while only a few may present with severe symptoms that meet the criteria for psychiatric illness. The malicious intent and unpredictable nature of terrorism may carry a particularly devastating impact for those directly and indirectly affected. However, despite the devastating nature of terrorism, community cohesion and posttraumatic growth are possible.

Although psychological effects of terrorism are virtually certain, relatively little is known about particular consequences for various subgroups

of the population or how people may react to different types of events. There is some evidence that children, survivors of past traumatic events (including refugees), ethnic minority populations, and those with preexisting psychiatric illness may be especially vulnerable to psychological consequences, although some of these data are contradictory. Events of closer proximity, longer duration, and greater intensity might be expected to result in increased psychological consequences.

The broader trauma literature may begin to help direct prevention and intervention efforts in response to terrorism events. However, it is no longer sufficient to rely on information obtained from research on other kinds of traumatic events because disasters, and particularly terrorism, differ in fundamental ways. Continued research examining the psychological consequences from a range of disaster and traumatic events will help improve understanding of the impact and provide evidence to target interventions.

Finding 2: Terrorism and the threat of terrorism will have psychological consequences for a major portion of the population, not merely a small minority. Research studies that have examined a range of terrorism events indicate that psychological reactions and psychiatric symptoms clearly develop in many individuals. To optimize the overall health and well being of the population, and to improve the overall response to terrorism events, it is necessary that these potential consequences be addressed preventively as well as throughout the phases of an event.

3
Current Infrastructure in the United States for Responding to the Psychological Consequences of Terrorism

There is a substantial commitment by many individuals, organizations, and agencies to provide assistance to promote psychological recovery following disasters and terrorism events. Given the number and variety of responders, there are inherent difficulties in planning and coordinating these services. In addition, preparedness and prevention efforts to buffer the population against negative psychological consequences are severely limited. In general, an effective infrastructure should provide the following functions to adequately prepare for and respond to psychological consequences:

1. Basic resources including food, shelter, communication, transportation, information, guidance, and medical services
2. Interventions and programs to promote individual and community resilience and prevent adverse psychological effects
3. Surveillance for psychological consequences, including distress responses, behavior changes, and psychiatric illness, and markers of individual and community functioning before, during, and after a terrorism event
4. Screening of psychological symptoms at the individual level
5. Treatment for acute and long-term effects of trauma
6. Response for longer-term general human service needs that contribute to psychological functioning (e.g., housing, financial assistance when the event creates job loss)
7. Risk communication and dissemination of information to the public, media, political leaders, and service providers

8. Training of service providers (in medical, public health, emergency, and mental health systems) to respond to a terrorism event, and to protect themselves against psychological trauma
9. Capacity to handle a large increase in demand for services to address psychological consequences in the event of a terrorist attack
10. Case-finding ability to locate individuals who have not utilized mental health services but need them, including underserved, marginalized, and unrecognized groups of people (e.g., undocumented immigrants, homebound individuals) and others with unidentified needs

Effective delivery of these services necessitates a well-defined and coordinated system. An effective response will require the joint effort of public health, mental health, medical, and emergency systems. Currently, a variety of systems are in place at federal, state, and local government levels, as well as in the private sector, that comprise the response to a terrorism event. Lack of coordination among these diverse systems is a significant impediment to effective response. At times, the systems and services provided are overlapping and redundant, while in other cases, there are gaps in funding, services offered, and populations addressed. These complexities are more apparent following a traumatic event such as a terrorist attack when confusion may be present and needs may exceed the surge capacity of the system. Furthermore, these needs may be delayed and chronic, and the system response will follow a different time course than responses to physical needs.

This chapter briefly describes the various systems and programs that are currently in place at federal, state, and local levels and emphasizes the gaps that exist in the planning, preparedness, and public health infrastructure necessary for successful prevention and response.

FEDERAL GOVERNMENT SYSTEMS FOR RESPONSE

The federal government administers a number of initiatives and programs that contribute to reduction of the psychological consequences of disasters. The relationships among the various agencies and programs are complex and promise to change as the newly established Department of Homeland Security continues to take form. In large measure, federal involvement occurs after an event—not before or during. The federal government will provide assistance on an as-needed basis for declared emergencies or major disasters that overwhelm local capacity as outlined in the Federal Response Plan .[1] The Federal Emergency Management Agency

[1] As described below, the Department of Homeland Security is currently in the process of consolidating the Federal Response Plan and other response plans into an all-hazard National Response Plan.

Box 3-1
Web Sites of Federal Agencies and Programs with Roles in Responding to the Psychological Consequences of Terrorism

Centers for Disease Control and Prevention: http://www.cdc.gov
Center for Mental Health Services Disaster Mental Health: http://mentalhealth.samhsa.gov/cmhs/EmergencyServices/default.asp
Department of Defense: http://www.dod.gov
Department of Education: http://www.ed.gov
Department of Homeland Security: http://www.whitehouse.gov/deptofhomeland
Department of Justice: http://www.usdoj.gov/
Department of Veterans Affairs: http://www.va.gov
Federal Emergency Management Agency: http://www.fema.gov
Federal Response Plan: http://www.fema.gov/rrr/frp/
National Child Traumatic Stress Network: http://www.nctsnet.org/index.htm
National Institute of Mental Health: http://www.nimh.nih.gov/
National Transportation Safety Board: http://www.ntsb.gov/
Office of Emergency Preparedness: http://ndms.dhhs.gov/
Office for Victims of Crime: http://www.ojp.usdoj.gov/ovc/
Substance Abuse and Mental Health Services Administration: http://www.samhsa.gov/

and the Substance Abuse and Mental Health Services Administration provide important support for individuals experiencing mild to moderate psychological distress after terrorism and disasters. A number of other agencies also contribute to restoring psychological well-being after terrorism, but regardless of federal assistance, primary responsibility for recovery from a disaster remains with the local affected jurisdiction. Federal-level efforts and the activities aimed at reducing the psychological impact of terrorism are described in this section. Much of the information discussed in this section was obtained from publicly available information on each agency (see list of Web sites in Box 3-1).

Federal Response Plan

The response of the federal government to a major emergency situation is dictated by the Federal Response Plan (FRP), which is designed to coordinate the efforts of 27 federal departments and agencies and the Red

Cross. The FRP is invoked when the president makes an official declaration of disaster or when an event likely to require federal assistance is anticipated; it provides assistance to states whose local capacity to respond is overwhelmed during and after a disaster. Presidential declarations of disaster invoking the FRP occur only about 30 times a year during disasters of significant magnitude or complexity. The Federal Emergency Management Agency (FEMA) provides oversight for the FRP, and the various forms of federal assistance are organized into 12 emergency support functions (ESFs). These functions include transportation, communications, public works and engineering, firefighting, information and planning, mass care, resource support, health and medical services, urban search and rescue, hazardous materials, food, and energy. A lead federal agency is designated for each function.

All health-related activities, including mental health, are designated under ESF 8, health and medical services. The U.S. Public Health Service (PHS) through the Department of Health and Human Services (HHS) is responsible for coordinating the delivery of these services, which include the overall public health response, triage, treatment, and transportation of survivors. The FRP (FEMA, 1999) states as a planning assumption that

> The damage and destruction of a major disaster, which may result in multiple deaths and injuries, will overwhelm the State and local mental health system, producing an urgent need for mental health crisis counseling for disaster victims and response personnel.

Within HHS, the Center for Mental Health Services (CMHS) of the Substance Abuse and Mental Health Services Administration (SAMHSA) is charged with coordinating federal assistance for psychological needs. SAMHSA is responsible for the following functions: training of disaster mental health workers; assessing mental health needs; and linking local, state, and federal programs for mental health response. SAMHSA provides these functions primarily through the Crisis Counseling Assistance and Training Programs, which are described in the following section. The ESF 6, mass care, is led by the American Red Cross. Because the Red Cross provides disaster mental health services in all of its service delivery sites, psychological consequences of disasters are also addressed under ESF 6. Activities related to responding to the psychological consequences of traumas and disasters are not limited to SAMHSA and the Red Cross. A number of other lead and support agencies named in the FRP may provide assistance for psychological issues, although they may not explicitly be labeled as part of the mental health response. As noted below, the newly established Department of Homeland Security will consolidate the FRP with other federal response plans into an all-hazard response plan in the future.

FEMA, SAMHSA, and the Crisis Counseling Assistance and Training Program

In a presidentially declared or anticipated disaster, FEMA coordinates activities at all levels: federal, state, local, and private. Among other tasks, FEMA coordinates public information and outreach, and works with state representatives to identify unmet needs. In order to address mental health needs in disaster situations, FEMA has authorized SAMHSA's Crisis Counseling Assistance and Training Program (CCP) to provide funding to states that provide documentation that their state and local resources are insufficient to respond to psychological needs. FEMA works in partnership with CMHS, which assesses mental health needs, provides training materials, arranges training for outreach workers, and evaluates grants submitted to FEMA through the CCP.

The CCP is a central element of the federal government response to the psychological consequences of disasters. It provides two types of grants to state governments: immediate services grants and regular services grants. An immediate services grant funds 60 days of counseling services, and applications for individual assistance are due within 14 days of a presidential declaration of disaster. A regular services grant must be applied for within 60 days of the disaster declaration; it funds an additional nine months of crisis counseling programs. Services provided under the CCP include education and counseling, community outreach, individual crisis counseling, and referral services. Services are limited to short-term interventions focused on people with ordinary psychological responses to extraordinary stressors. FEMA does not fund longer-term mental health services such as treatment for psychiatric disorders or substance abuse, office-based therapy, or medications (HHS, 2001b).

Other Activities of SAMHSA to Respond to the Psychological Consequences of Terrorism

In addition to its central role in the CCP, SAMHSA provides a number of other services that contribute to the overall response to the psychological consequences of terrorism. For example, it funds the National Child Traumatic Stress Network (NCTSN), a coalition of 37 centers focusing on childhood trauma, which is overseen by the National Center for Child Traumatic Stress. This network is intended to educate the public and professionals regarding child traumatic stress, extend the availability of counseling, and develop and disseminate evidence-based treatments and preventive programs. The NCTSN has a number of ongoing initiatives relevant to terrorism, including programs to address violence in the community, war and refugees, and traumatic grief, as well as a newly estab-

lished Terrorism and Disaster Branch located at the National Center. The goal of the branch is to improve national preparedness and response for children, families, schools, and communities, and will collaborate with other NCTSN program areas focusing on school-based interventions to improve responses by schools to the psychological consequences of terrorism and mass trauma. NCTSN was also active in responding to psychological needs after the September 11, 2001, terrorist attacks, providing mental health services, consultation, training, research services, and public education.

SAMHSA's Emergency Services and Disaster Relief Branch of CMHS, in collaboration with the National Center for Post-Traumatic Stress Disorder of the Department of Veterans' Affairs, has undertaken a multiyear project called the National Crisis Response Technical Assistance Project. This project has recently been initiated with the goal of promoting "state and local capacity for mental health crisis response across the country" (CMHS, 2001). In addition, SAMHSA has a Program on Trauma and Terrorism within the Division of Prevention, Traumatic Stress and Special Programs of CMHS, and has initiated other programs to provide technical assistance and training to state mental health workers; to aid in the assessment of mental health needs; and to administer grants for services to public health workers.

Other Federal Agencies with Roles in Responding to the Psychological Consequences of Terrorism

Other segments of the federal government play various roles in the overall system for responding to the psychological consequences of disasters, including terrorism. Below is a description of some of these departments with a brief discussion of the nature and extent of their involvement in response. This is not intended to represent a comprehensive explanation, but rather to describe some of the agencies primarily involved in responses to disasters.

The Centers for Disease Control and Prevention

As the lead public health agency of the United States, the Centers for Disease Control and Prevention (CDC) has a central role in responding to disasters, including terrorism events, that put the public's well-being in danger. The CDC's responsibilities in the area of terrorism have focused on issues of biological and chemical terrorism, given its expertise in infectious diseases and epidemiologic surveillance. The CDC has developed a strategic plan to address the use of a biological or chemical agent in a terrorist attack. As part of that plan, communication with the public

through the media is noted as an essential component of limiting potential panic and disruption from such an attack (Khan et al., 2000).

The CDC's involvement in other types of disasters is often limited to the area of communication activities. A CDC Emergency Response Team includes as a key element a public information officer who designs messages for the public, the government, and the media. The Emergency Response Team uses a strategy of centralizing communications operations to decrease conflicting messages to the public. The CDC has agent-specific communication response plans prepared in order to facilitate rapid utilization in the event of a biological, chemical, or radiological terrorist attack. These resources within the CDC function to train and assist local authorities in risk communication; in general, the risk communications activities that follow a disaster or terrorism event are performed by local government and public health authorities.

As part of the FRP, the CDC is designated to assist in monitoring emergency worker health and safety. This monitoring is most often focused on potentially toxic environmental exposures, as well as on physical injuries such as falls. Job-related stress and psychological distress are frequently noted as one of the major categories of occupational hazards (Weeks et al., 1991) and thus should be considered when monitoring the health of emergency responders.

Two programs within the CDC also deserve mention here: the Office of Public Health Emergency Preparedness and Response (OPHEPR) and the Centers for Public Health Preparedness. OPHEPR was created in October 2001 with the intent of coordinating the terrorism-related activities of HHS. The CDC provides funding for the Centers for Public Health Preparedness, a network of 15 academic centers across the nation. These centers are usually based in schools of public health and focus on education, research and evaluation, and dissemination of best practices, with the goal of ensuring that future public health workers are equipped with the knowledge and skills necessary to respond to terrorism (Gilmore Commission, 2002).

Department of Defense

The Department of Defense (DoD) has its own comprehensive medical system, the Military Health System, which includes mental health units. This system offers assistance primarily to active members of the military (Becker, 2001). After the attack on the Pentagon on September 11, 2001, this system for mental health response was mobilized and functioned in collaboration with civilian and local services. DoD is designated by the FRP as the lead agency for ESF 3, public works and engineering, and also is a support agency for all of the other functions. DoD may pro-

vide additional resources, equipment, and technical assistance after a disaster or terrorist attack as needed. During wartime, DoD is responsible for communication with the public, an area of activity that has clear implications for psychological well-being. The National Guard is a reserve force of the U.S. armed forces, functioning in a dual state and federal capacity. In times of need, the National Guard will interface at the local level. After the terrorist attacks of September 11, 2001, more than 50,000 National Guard members were activated to provide security in localities across the United States and to fight terrorism internationally (National Guard Bureau, 2003).

Department of Education

In the event of a disaster, the primary goal of the Department of Education is to restore the learning environment for children. As discussed in Chapter 2, terrorist attacks—whether they are experienced directly or indirectly—can have significant psychological consequences for children. These psychological consequences can be disruptive to learning, whether or not the physical learning environment has been disrupted. Every school district must develop a crisis management plan for responding to violent or traumatic incidents in order to qualify for funding under the Safe and Drug-Free Schools and Communities Act State Grant Program. Ongoing efforts by the Department of Education have focused on developing a model school crisis plan, for comparison by schools to their own plans, thus streamlining the entire development process. Additionally, the Department of Education has encouraged school districts to strengthen and reevaluate their crisis plans in light of potential terrorism events and has made available $30 million in discretionary grants to assist school districts in these activities (U.S. Department of Education, 2003). The department has released guidelines indicating that crisis plans should address four major areas: prevention and mitigation, preparedness, response, and recovery (U.S. Department of Education, 2003). Preparation and planning for recovery include such activities as pre-approving and training teams of mental health providers and creating a notification system for parents.

A central aspect of the Department of Education's terrorism response has been through Project School Emergency Response to Violence (Project SERV). This program was established by Congress in 2001 and funded with $10 million through an act authorizing spending on recovery from and responses to terrorism.[2] It will have to be refunded each year by an

[2] Emergency Supplemental Appropriations Act for Recovery from and Response to Terrorist Attacks in the United States, 2001 (P.L. 107-38).

act of Congress. Project SERV provides grants and funding for "education-related services to local education agencies in which the learning environment has been disrupted due to a violent or traumatic crisis"[3] and includes short-term (6 months) funding for the immediate restoration of the learning environment and longer-term (up to 18 months) funding for a more extensive plan that coordinates community, federal, state, and local resources to support the school community. Since its establishment, SERV has funded 12 applications for events such as school shootings.

After the September 11, 2001, terrorist attacks, $4 million was provided by Project SERV to the New York City Department of Education to help city schools cope with the trauma.

Department of Homeland Security

In October 2001, President George W. Bush issued an executive order creating the Department of Homeland Security. The new department is a major reorganization of the federal government in the United States, bringing together under its authority a number of existing federal agencies. The stated mission of the Department of Homeland Security is to prevent terrorist attacks, reduce vulnerability to terrorism, and minimize damage and promote recovery from terrorist attacks. The department will have four divisions: Border and Transportation Security; Emergency Preparedness and Response; Chemical, Biological, Radiological, and Nuclear Countermeasures; and Information Analysis and Infrastructure Protection. The Department of Homeland Security is currently active, but many of the reorganizations and proposed programs are either currently being put into place or have yet to be carried out.[4]

It is unclear how the creation of the Department of Homeland Security and the corresponding reorganization of the federal government will impact the federal government's response to the psychological consequences of terrorism, although the reorganization will affect a number of the aforementioned federal programs and divisions. FEMA is now part of the Division of Emergency Preparedness and Response. The proposal for the department notes that FEMA will be a central aspect of the Department of Homeland Security and that it will "maintain FEMA's procedures for aiding recovery from natural and terrorist disasters" (White House, 2002a). In addition, the Division of Emergency Preparedness and Response will work to consolidate existing federal response plans for vari-

[3] Emergency Supplemental Act, 2002 (P.L. 107-117); U.S.C. 7131.

[4] The organization, strategies, and vision of the Department of Homeland Security is reflected in the *National Strategy for Homeland Security* (White House, 2002b).

ous types of emergencies (e.g., FRP, National Contingency Plan) into an "all-hazard plan" called the Federal Incident Management Plan which may be operational as early as September 2003. The Division of Emergency Preparedness and Response will also serve as a central source of information for state and local officials and administer various existing federal grant programs for training and preparedness of emergency responders.

The National Disaster Medical System (NDMS)—a collaborative effort of HHS, DoD, VA, FEMA, state and local governments, private businesses, and civilian volunteers—is also now operated by the Department of Homeland Security as part of the Division of Emergency Preparedness and Response.[5] More than 2,000 civilian, military, and VA hospitals have volunteered to serve as part of the NDMS (Becker, 2001). The NDMS augments overwhelmed local resources to provide health care services after a disaster and may be activated at the request of a local, state, or federal official. The NDMS is responsible for leading many of the specific response actions outlined in the FRP. The NDMS includes Disaster Medical Assistance Teams (DMATs), with more than 7,000 affiliated private sector health care professionals, including physicians, nurses, and mental health professionals. As of 2001, four of these teams were specialized mental health DMATs that consist of psychologists, psychiatrists, and social workers (Becker, 2001). When DMATs are activated, their members are automatically federalized and thus given permission to practice in the affected state. This is important in ensuring that providers have the authority to provide care in the event of a disaster.

One initiative of the Department of Homeland Security is a public education effort aimed at increasing individuals' knowledge about potential threats in order to increase preparedness during an attack. Information has been provided in brochure format and through the Internet at www.ready.gov, and focuses on three areas of preparedness: make a kit, make a plan, and be informed. It describes specific actions to take in the event of different types of terrorist attacks, such as "sheltering-in-place" if there is air contamination, and recommends components of emergency supply kits, including such items as clean water, flashlights, first-aid supplies, and extra prescription medications.

Department of Justice

The Department of Justice's Office for Victims of Crime (OVC) provides various forms of support to victims of federal crimes and their fam-

[5] Previously, the NDMS was operated by the Office of Emergency Preparedness (OEP) of the Department of Health and Human Services.

ily members. The OVC was authorized by Congress through the Victims of Crime Act. The OVC provides training and technical assistance, supports emergency responses including crisis counseling, and administers the Crime Victim's Fund. The Crime Victim's Fund supports state victim's assistance and compensation programs that reimburse victim's expenses for health care, mental health counseling, funerals, and lost wages. The OVC also administers grants for programs and research related to victim's issues. The Terrorism and International Victims Unit of the OVC is responsible for coordinating all facets of assistance to survivors of terrorist acts and international crimes. It operates the Antiterrorism and Emergency Assistance Program, which provides information, identifies resources, administers various compensation programs, and advances training and educational programs for groups such as emergency responders and mental health providers. In response to the September 11, 2001, terrorist attacks, this program, among other activities, supported crisis counseling provided through CMHS.

Department of Veterans Affairs

The Department of Veterans Affairs (VA) is recognized as a support agency by the Federal Response Plan. The VA plays a role in coordinating federal responses to the psychological consequences of terrorism through its National Center for Post-Traumatic Stress Disorder (NC-PTSD). Mandated by Congress in 1989 to focus on the issues of veterans with posttraumatic stress, NC-PTSD activities include education, training, consultation, and research on stress and trauma. The NC-PTSD is a central research authority on PTSD and has advised clinicians and others planning mental health services to respond to mass traumas including terrorism. A training program designed by the NC-PTSD identifies and trains VA experts on disaster mental health so they are able to respond to major national disasters.

The VA also operates the Readjustment Counseling Service (RCS), which provides individual mental health care for all veterans affected by stress and trauma. The RCS functions through hundreds of centers located in communities and is staffed with trained mental health professionals. These staff members also provide psychological services to nonveterans who experience natural and other disasters. Ongoing collaboration within the VA between the NC-PTSD and RCS will help to establish interdisciplinary disaster mental health response teams that might strengthen the federal system for response (Young et al., 2000).

National Institute of Mental Health

The National Institute of Mental Health (NIMH) is not involved in direct responses for the psychological consequences of terrorism, but rather plays the crucial role of setting the research agenda for federal funding. The NIMH issued a request for applications for "Research in Response to Terrorist Acts Against America" in the months after the September 11, 2001, attacks. This funding will support research projects relating to the psychological consequences of terrorism and traumatic events such as evaluations of treatment efficacy. This type of research is critical to effectively inform policy and develop interventions, as discussed at the conclusion of Chapter 2.

National Transportation Safety Board

The National Transportation Safety Board (NTSB) has jurisdiction over any commercial aviation crash involving significant loss of life occurring in the United States, as well as major crashes on other forms of transportation. Following a transportation event, the NTSB is responsible for investigating the circumstances of the incident. Its Office of Transportation Disaster Assistance (formerly the Office of Family Affairs) provides assistance to the families of victims and survivors and is charged with coordinating resources to support state and local entities, including the airlines. Among other activities, the NTSB notifies families of deaths, provides psychological and logistical support to families and survivors, arranges memorial services for victims, and maintains contact with families and survivors regarding the status of the investigation. The American Red Cross has been designated by the NTSB to provide the psychological response after a transportation disaster. In response to this designation, the Red Cross created the Aviation Incident Response (AIR) team, an interdisciplinary group of disaster experts that advises the Red Cross on issues unique to aviation and other transportation disasters and leads the Red Cross disaster response in these instances.

Summary

A number federal agencies play critical roles in the nation's response to the psychological consequences of terrorism. These agencies administer various programs, and have particular jurisdictions and areas of expertise. While there is increased awareness of the need to prepare responses to psychological issues that result from terrorism events, there remains a lack of coordination among federal agencies. Any future plan-

ning must account for the new structure of the federal government that has been initiated in response to terrorism in the United States.

STATE AND LOCAL GOVERNMENT SYSTEMS FOR RESPONSE

The National Strategy for Homeland Security proposes the creation of a national incident management system, in collaboration with federal, state, local, and nongovernmental public safety organizations (White House, 2002b). This system would be adaptable for different types of incidents, would identify common terminology, and would provide a coordinated command source. Additionally, the strategy proposal states that the federal government will require all state and local first responder organizations to adopt the existing Incident Management System[6] model as a condition of federal grant funding. Regardless, there is still currently a great deal of variation among the various state- and local-level systems for response. The state and local infrastructure is vital to effective response, given the local and regional nature of recent terrorism events. The Oklahoma City bombing was mostly local, while the 2001 Anthrax attacks and September 2001 air attacks were largely regional events. Regional preparedness will also be tested in the event of terrorism in bordering countries where border security and related issues will likely need to be addressed. This section will provide a general overview of these systems.

State Government Systems for Response

Each state is required to have a disaster plan that dictates responses in the event of a disaster. State governments are required by federal law to include a mental health component in these disaster plans. However, there is no standard approach to address the incorporation of mental health issues. The development of mental health components of the plans is often dependent on the presence of individuals with expertise and experience in the area. Funding is another important determinant of state-level preparedness for the psychological consequence of terrorism. Current budgetary constraints on many state and local governments may make the development and implementation of mental health response plans more difficult.

State emergency response plans are frequently similar to the FRP.

[6] The Incident Management System is also referred to as Incident Command Structure or Unified Command Structure, et cetera, and is a model of managing responses to disasters and other incidents. This type of response system is currently in place in a number of states.

Usually a state emergency management authority will coordinate service agencies within the state, each of which has responsibility for various functions of response. For example, the Department of Health may direct responses for a bioterrorism attack, but may rely on the state emergency manager to call upon other departments from which it might require support, such as the Departments of Transportation and Human Services. Some states have county-level emergency response managers, who are responsible for coordinating local resources and may be called upon by the director of the state office for specific tasks. In response to new federal requirements, many states have incorporated all or part of the state-level Office of Homeland Security into their existing state emergency management authority.

In practice, much of the immediate and short-term state disaster mental health response is conducted through routine community mental health services. In the event of a presidentially declared disaster, funding streams from the FEMA/SAMHSA Crisis Counseling Assistance and Training Program (CCP) are usually directed by the state to the local agencies that provide services, although the manner in which this occurs depends on how the state mental health system is organized. Some states operate their own mental health facilities, while the majority outsource most treatment functions to community organizations.

Preexisting relationships between state and local agencies or organizations and among providers become very important in the event of a disaster. These relationships can allow the state to organize services swiftly, provide accountability for funds, and help ensure the quality of services. The scope and range of services provided can be limited if agencies without preexisting relationships with state governments do not receive federal support. Services are directed to the natural client bases of the agencies with preexisting relationships, leaving large gaps in services and outreach. A similar issue arises with private practitioners who may have the expertise and experience to provide care, but may not have relationships with government agencies.

Although the CCP supports states in providing resources for individuals with mild distress reactions, state mental health response plans must also provide for those individuals with diagnosable psychiatric illness. The CCP provides referrals for mental health services, but federal funding will not provide more intensive and ongoing care for these individuals, even if the illness develops subsequent to the disaster or terrorist attack. Thus, services for psychiatric illnesses often occur through the preexisting state public mental health care system. The transition from the postdisaster psychological counseling system to more traditional mental health services is a "complex and political process" (APA Task Force, 1997, p. 33) during which individuals may be lost to the system.

Licensing for mental health professionals varies across states. Most states allow mental health professionals such as psychologists to practice up to 30 days in another state even in the absence of a disaster. Many states have agreements with bordering states to activate reciprocal licensing for all health professionals in the event of a disaster. Also, some states stipulate that health professionals working under the auspices of the Red Cross are automatically permitted to practice within the context of the disaster response.

Local Government Systems for Response

Systems for response by local governments are quite variable, perhaps more so than state systems. This section reviews some of the common features and challenges of local government (generally, county-level) systems for mental health response to terrorism events.

As mentioned above, many counties and local jurisdictions employ emergency response managers who coordinate local resources in the event of a disaster. These individuals are responsible for informing key people at the local and state levels to mobilize resources. In general, county mental health agencies are the principal providers of the crisis counseling programs that will be established after a terrorist attack. This responsibility frequently presents unique challenges to agencies that normally serve individuals with serious ongoing psychiatric illnesses. County mental health agencies must maintain care for their regular population, which may be experiencing worsening of symptoms due to the disaster, while at the same time provide additional crisis counseling services to individuals with psychological impact but not psychiatric illness (Young et al., 2000). The training and experience to do so may or may not be present in a county mental health agency, which highlights the need for pre-event training and preparation for such an event. The local mental health authority must be prepared to fulfill its responsibilities in a potentially chaotic situation, but must also ensure that its capacity is adequate to respond to a significant surge in need for services.

Some counties have plans in place to provide assistance and additional resources to other counties in the event of a disaster that overwhelms local capacity. For example, the State of California has crisis teams for each of its medium-size or larger counties that can provide crisis counseling after a traumatic event. Through mutual aid agreements, these teams may provide assistance to other counties in need (California Department of Mental Health, 2001).

School-based mental health services constitute another area in which county-level governments can play an important role. As discussed earlier, county governments and school district officials have been encour-

aged by the U.S. Department of Education to develop or strengthen school crisis management plans in light of terrorism threats (U.S. Department of Education, 2003). Many states have developed model crisis management plans for use by individual localities (for example, see Virginia Department of Education, 2003). Among other functions, school crisis management plans will often outline relationships with county-level mental health agencies and include provisions for interventions with directly affected students and for counseling support for students and staff. In addition, the plans frequently outline communications procedures for media, staff, students, and parents, including communication of what types of psychological reactions to expect in children. A number of counties have plans in place that specifically acknowledge the psychological consequences of terrorism and other forms of traumatic events. For instance, Montgomery County in Maryland has been praised for its response to the psychological consequences of the September 11, 2001, terrorism attacks and the Washington area sniper attacks of 2002. In response to each of these events, the county school system provided supportive counseling to more than 139,000 students and 20,000 staff members (Mintz, 2003).

PRIVATE SECTOR SYSTEMS FOR RESPONSE

Private sector systems for response include a variety of groups ranging from the American Red Cross, to university departments of psychology, to individual religious groups and charities. Response efforts may be initiated by organizations, agencies, community groups, and/or individuals, and frequently are not coordinated with one another. The National Voluntary Organizations Active in Disaster (NVOAD) has sought to increase the level of communication and coordinated planning among voluntary and community organizations. Members of NVOAD include a number of national level organizations such as the American Red Cross, the Salvation Army, and many faith-based organizations, as well as state-level chapters that include most of the states and territories in the United States. Some of the private-sector systems for response are described briefly in this section.

American Red Cross

The American Red Cross is the largest private organization responsible for responding to human needs after disasters. Since 1905, the Red Cross, under charge from the federal government, has provided for the immediate human needs of disaster survivors. In 1989, the Red Cross recognized the need for a systematic plan to respond to psychological needs. The Red Cross Disaster Mental Health Services (DMHS) Program was

developed and evolved over the next 10 years (Jacobs, 1995). A central goal of the program is to help Red Cross disaster responders work more effectively by addressing the stress and trauma related to disaster work. The program also provides mental health-related services and resources to disaster survivors, other disaster-relief workers, and families of Red Cross disaster responders (American Red Cross, 1998). The FRP identifies the Red Cross as a support agency whose duties regarding psychological responses are specified as including the provision of supportive counseling to disaster survivors and family members of victims. The agency also is noted by the FRP as responsible for providing referrals and information to family members regarding available health resources (FEMA, 1999).

The DMHS program, like most Red Cross services, relies almost exclusively on volunteers (greater than 90 percent) and focuses on the provision of direct services after disasters. It is based on an integrated nondisciplinary system, using one training program for psychiatrists, psychologists, social workers, counselors, marriage and family therapists, and nurses with psychiatric training. All of these professionals have similar roles in disaster response, and these roles are interchangeable. To be eligible for training through DMHS, an individual must be licensed in his or her profession by a State Licensing Board if the state requires licensure. The Red Cross training uses a two-day video-based course. By the year 2000, 9,000 mental health professionals had been trained, 2,000 of whom were members of response teams (Weaver et al., 2000).

The activation process for DMHS volunteers varies for local and national disasters. During a local disaster, the local chapter of the Red Cross may call on individuals in the area who received training and registered with the chapter. DMHS activation for national disasters is coordinated through the national headquarters of the Red Cross. The national headquarters assesses needs together with the state lead chapter for the affected area and informs Red Cross state lead chapters across the country of those needs. The state lead chapters then notify all local chapters, who contact individual qualified volunteers. Each local chapter has a Disaster Services Human Resources Office, and all DMHS-trained volunteers who wish to be activated in the event of a national disaster must first register with this office (Smith, 2002).

Additionally, in response to a designation by NTSB to respond to psychological needs following aviation disasters, the Red Cross has developed and maintains Aviation Incident Response teams (see above). In the spring of 2003, the realm of responsibility of the AIR teams was expanded from aviation disasters to include all major disasters caused by terrorism and weapons of mass destruction. How this expanded focus will affect AIR team functioning remains to be seen.

Workplace

In the United States, most acts of terrorism have occurred in the context of a workplace. Many of the anthrax attacks of 2001, the attacks of September 11, 2001, the Oklahoma City bombing, and the 1993 World Trade Center attack have confronted people in their place of employment. Because most people must continue to perform their jobs after a traumatic event, parts of the recovery process must necessarily occur in the workplace. After the anthrax attacks of 2001, it was essential for the U.S. mail system to continue to function. Postal workers were required to sort and deliver mail despite their fears of exposure. Similarly, after the attacks of September 11, 2001, military employees stationed in the Pentagon carried on with strategic planning in the immediate aftermath of the threat.

The workplace environment provides an important opportunity for outreach to individuals. Workplace systems for responding to the psychological consequence of terrorism occur on both an informal level in which leaders, managers, and coworkers support one another and a formal level characterized by services such as counseling and Employee Assistance Programs (EAPs).

Employee Assistance Programs are systems designed to provide psychological support to employees from a skilled source outside the organization, allowing for the preservation of confidentiality. Some common elements of EAP responses to a traumatic event include group debriefings and individual and group counseling. The effectiveness of group debriefings is a source of debate (NIMH, 2002), but they are frequently used in the workplace. After the September 11, 2001, attacks, the EAP for Merril Lynch, located in lower Manhattan, established groups of individuals that met to prepare themselves for their return to the workplace. This preparation covered both psychological concerns and physical concerns such as air quality and safety (National Partnership for Workplace Mental Health, 2002). EAPs may vary significantly in their scope and preparedness for disasters, and smaller businesses frequently have no system in place to respond to the psychological needs of their employees.

Often overlooked as sites for workplace preparedness and response are farms and food production and distribution systems. An event involving agricultural terrorism has the potential for significant disruption and damage to human lives and to local, regional, and national economies. The outbreak of Foot and Mouth Disease in the United Kingdom in 2001, while not a terrorism event, resulted in significant economic loses, which had psychological consequences for those affected (Advisory Panel to Assess Domestic Response Capabilities for Terrorism Involving Weapons of Mass Destruction, 2002). It is reasonable to assume that the psychological ramifications are a potential risk in the event of an attack involving

agricultural terrorism, given the stress associated with economic and social losses. While preparations for agricultural terrorism are topics of discussion (see, for example, Greco, 2002), the psychological impacts of these events should be also considered.

Primary Care

Many primary care visits are due to psychosocial issues that may manifest themselves as physical complaints (Heldring, 2002). However, there is currently no system in place in the primary care environment to organize primary care providers to respond to the psychological consequences of terrorism or other disasters. Primary care providers may have little or no training and experience in disaster response.

Efforts are under way, however, to address this issue. For example, a recently initiated project, directed by America's Health Together and supported by the Robert Wood Johnson Foundation is working to enhance mental health responses to terrorism in primary care settings. One of the organization's initiatives, "Mental Health and Primary Care in a Time of Terrorism," will assess the experiences and needs of primary care providers dealing with mental health problems, develop and disseminate education tools designed to help them, and assess the effectiveness of these tools in light of new knowledge about the nature of mental health responses to terrorism and bioterrorism (America's HealthTogether, 2003).

The Department of Defense used the primary care setting as an entry point for mental health care in its response to the September 11, 2001, attack on the Pentagon called Operation Solace. Individuals attending primary care clinics for any type of care were assigned a care manager if the medical problem was potentially related to the September 11, 2001, attacks, anthrax, deployment, or the war in Afghanistan. Care managers were mental health nurses or social workers and provided assistance with referrals for additional treatment, facilitated follow-up, and made available supportive interventions, among other tasks (Hoge et al., 2002).

Faith-Based

Faith-based settings, like the primary care setting, are natural environments for interventions to respond to the psychological consequences of terrorism. Ninety percent of respondents in one survey of reactions to the September 11, 2001, attacks reported that they turned to religion for help with coping after the events (Schuster et al., 2001). Certain individuals may prefer to seek help in such settings because they are seen as neutral, supportive, and accepting and may help people find some meaning in a tragic event.

As mentioned above, the American Red Cross operates the Aviation Incident Response team. It also has developed a Spiritual Care Aviation Incident Response (SAIR) team that is responsible for coordinating local spiritual care volunteers in the event of an aviation disaster. Working with the AIR team and the rest of the Red Cross, the SAIR team provides emotional and spiritual support to survivors, families, rescue workers, and airline personnel. SAIR may also assist with memorial services for victims. The SAIR team consists of spiritual counselors located throughout the United States who have been certified by one of five professional chaplain certification and education organizations in the United States: the Association of Professional Chaplains, the National Association of Catholic Chaplains, the Association for Clinical Pastoral Education, the National Association of Jewish Chaplains, and the International Conference of Police Chaplains (Booth, 2003). The AIR and SAIR teams were activated after the September 11, 2001, terrorist attacks and responded to the crash sites and the airports from which the hijacked flights originated as well as their intended destinations.

Local or Community Providers

As described in the section detailing federal-level systems, federal funding for responding to the psychological consequences of terrorism is often funneled through state agencies to community agencies and providers. However, these various agencies may be only loosely associated, or even unassociated, with one another and may be unaware of the activities of other agencies. The backgrounds and trainings of community and local providers will vary significantly; many do not have specific training in disaster mental health or the psychological consequences of terrorism.

Summary

Given the range of psychological consequences that result from terrorism, the venues for response to these consequences must be equally wide. Most of the efforts by governments and the Red Cross described above are generally focused on those individuals who are in the immediate geographical area of the disaster. Other settings that have been mentioned, such as primary care, the workplace, schools, and faith-based environments, provide opportunities to reach individuals who experience psychological distress as a result of terrorist acts but are not in the immediate physical vicinity of the disaster. These settings also may provide opportunities for preparedness during the pre-event phase of an attack. However, preparedness for psychological consequences currently is not widely addressed.

CAPACITY OF THE INFRASTRUCTURE TO RESPOND TO THE PSYCHOLOGICAL CONSEQUENCES OF TERRORISM

There are a number of services and resources in place at federal, state, and local levels that are available to respond in the event of a terrorist attack. However, it is less obvious how these systems work together to provide an effective and coordinated response to the range of psychological consequences that will present in populations. There is a general consensus among the public health and disaster mental health community that the infrastructure designed to promote and protect the public's health is inadequate to respond to psychological needs after a terrorism event of great magnitude or uniqueness. The best tests of the capacity of the nation's systems have come from the two largest terrorism events occurring in the United States in the recent past: the Oklahoma City bombing and the September 11, 2001, attacks. In addition, the uniqueness of the anthrax attacks in fall of 2001 drew attention to a new set of gaps in the infrastructure and brought to light the critical need for preparedness in all parts of the country, not just those areas directly impacted.

Although this report is not intended to provide a comprehensive review of the nation's responses to recent terrorism events, this section highlights the aspects of those responses that have been identified as either particularly problematic or successful. Many lessons can be learned from these events.

Response to the Oklahoma City Bombing

In 1995, the Murrah Federal Building in Oklahoma City was destroyed by a bomb that injured 800 and killed 168 people. Because Oklahoma City is a relatively small metropolitan area with about 500,000 residents, the psychological impact of the bombing extended to most members of the community. More than one-third of surveyed adults knew someone who was killed or injured in the bombing (Smith et al., 1999), and similar results were found among youth (Pfefferbaum et al., 1999). The response to the psychological impact began almost immediately and continues to this day.

In the immediate aftermath of the bombing, a family assistance center, referred to as the Compassion Center, was established at a local church. The church was identified as a disaster response center prior to the bombing because of its central location. The center was directed by the state medical examiner and served as the focal point for an array of activities, including victim identification and care for families, that were carried out by multiple state, federal, and volunteer agencies. It was also the center for coordination of the emergency mental health response. The

American Red Cross played a large role in many of the initial activities. Three to four hundred mental health professionals took part in this response, some of whom were mobilized through official channels such as the Red Cross Disaster Services Human Resources program. However, most came to the Compassion Center informally to offer their services. Many of these individuals had limited training and experience in disaster mental health care. Problems of coordination quickly arose, and it was necessary to develop a system for confirming credentials, screening for experience, and scheduling volunteers (APA Task Force, 1997). Many local clergy members offered assistance to the Compassion Center. Similar problems of credentialing, qualifications, and lack of experience arose with clergy as with other mental health professionals (APA Task Force, 1997). Furthermore, there was no preexisting response plan to organize clergy.

Mental health volunteers at the Compassion Center focused their assistance in four areas: family services, support services, death notification, and psychological services for volunteers in the center. Support services for rescue workers were largely modeled on Critical Incident Stress Management (CISM), which is frequently used, despite limited research and inconclusive findings regarding effectiveness. The Compassion Center also included a separate physical space for children staffed by a psychologist and other mental health professionals. This space provided structured play activities for children and assistance to parents and families in dealing with children's grief and with death notification.

In addition to this local organization of response, resources were mobilized at the state and federal levels to plan for a longer-term effort to promote psychological recovery. The Oklahoma Department of Mental Health and Substance Abuse Services (ODMHSAS) was designated by the governor of Oklahoma to oversee the emergency mental health services that would be needed (Tucker et al., 1998). However, the ODMHSAS had neither a disaster response plan nor preexisting relationships with other state emergency response agencies (Call and Pfefferbaum, 1999). The ODMHSAS established a crisis counseling hotline, mobile outreach teams, debriefings, and provider trainings. The office prepared an Immediate Services Grant proposal to the CCP of FEMA–CMHS, and funding was provided by May 8, 1995 (APA Task Force, 1997). A Regular Service Grant was also approved that extended the funding for an additional nine months.

These funds were used to establish Project Heartland, a public mental health program to provide crisis counseling, outreach, education, and referrals as dictated by the CCP. The ODMHSAS provided oversight during the transition from the immediate crisis services provided by the Red Cross at the Compassion Center to the ongoing activities of Project Heart-

land. Tensions arose between local Red Cross relief workers and the ODMHSAS during this process (Call and Pfefferbaum, 1999). Less than one month after the bombing, a statewide forum was held to collect input from stakeholders and inform them of the activities and priorities of Project Heartland. Particular concerns included the need for accessible and culturally sensitive services, services for children, and education for the media on responses to traumatic events (Call and Pfefferbaum, 1999). Project Heartland spent the greatest portion of its time providing support groups and client advocacy. Support groups were established for a variety of groups such as rescue workers, widows and widowers, parents who lost children, and school counselors. In recognition of the special needs of youth, some funding was channeled directly to the school system. Project Heartland also established programs through a number of subcontract organizations that focused outreach, counseling, and education on special populations such as African Americans, Hispanic Americans, the elderly, youth, and people with preexisting psychiatric disorders. However, CCP-funded programs such as Project Heartland do not provide psychiatric treatment to individuals who need ongoing or specialized care. Issues arose regarding the perception that referrals for treatment were inadequate (Call and Pfefferbaum, 1999). This may have been related to a lack of established relationships with providers, and the limitations of funding for such care. In recognition of these limitations, the American Red Cross funded long-term treatment for individuals through the Sunbridge Counseling Program, operated by the Mental Health Association of Oklahoma County.

After FEMA–CMHS funding expired, financial responsibility for Project Heartland was taken on by the Office of Victims of Crime of the Department of Justice and the network of care that was initiated on the day of the bombing continued to function for years, although over time it has received less government support and has become reliant on foundation and other charitable funding. This emphasizes the long-term psychological needs after an event of such magnitude. The rapidity and breadth of the mental health response to the Oklahoma City bombing were admirable, particularly in light of the unprecedented nature of the terrorist attack at the time. However, it has been noted, in retrospect, that a number of gaps in the response existed. These include lack of disaster preparation in the mental health department; problems with coordination, supervision, and training of the numerous volunteers who wanted to help; absence of supervision for some of the unlicensed providers; limitations of funding; and confusion or tension between different authorities, especially when the appropriate jurisdictions were not clearly laid out. A further limitation was that no systematic evaluation of Project Heartland was performed in order to determine its effectiveness.

Responses in New York City and the Washington, D.C., Metropolitan Area to the September 11, 2001, Terrorist Attacks

The psychological impact of the terrorist attacks on September 11, 2001, was widespread and not limited to the geographical areas of the attacks. The mental health response to the terrorist attacks was necessarily an extremely complex effort that was swiftly enacted. Complex responses took place in New York City and the Washington, D.C., metropolitan area; this section focuses on those responses as illustrative examples.

Responses in New York City

During the immediate postimpact period, as in the Oklahoma City bombing, much of the response to meet psychological and emotional needs of families, survivors, and rescue workers in New York City was managed by the American Red Cross. Family assistance centers were established throughout the city and the surrounding areas, and support centers providing physical and psychological respite for rescue workers were set up near the site of the World Trade Center. Much of the care and services provided during this time was made available on a pro bono basis. Mental health professionals with varying levels of experience arrived from all over the country to volunteer their services, many coming without being asked, adding to the complexity of coordinating efforts. A lack of expertise in disaster mental health among providers and administrators was a barrier to rapid implementation of effective responses, but the overall response did benefit from an existing emergency mental health plan in the New York State Office of Mental Health (NYS-OMH).

The development of a more formal and long-term network for psychological response was taken on by the NYS-OMH, in collaboration with the mental health departments of New York City and nearby counties. A local university department of public health was commissioned by the NYS-OMH to rapidly carry out a needs assessment evaluation through door-to-door surveys and projections based on previous disaster experiences. This information allowed the NYS-OMH to make projections of the estimated increase in demand for traditional mental health services for psychiatric illnesses (Herman et al., 2002). To address individuals with less severe psychological consequences, the NYS-OMH, with help from CMHS, applied for funding from the CMHS–FEMA CCP by successfully demonstrating that the existing mental health capacity was inadequate to meet the psychological needs of the population. The network of crisis counseling and public outreach and education established in New York City and the surrounding areas with funding from the CCP was termed

Project Liberty. Coordinated by the NYS-OMH, Project Liberty utilized more than 100 mental health agencies to provide services (Felton, 2002). Although preexisting relationships between the NYS-OMH and local mental health departments facilitated the implementation process, it was necessary to develop an entirely new infrastructure and procedures for a number of important functions. These included recruitment and training of outreach workers and counseling staff, development of materials and media campaigns for public outreach and education, and creation of mechanisms for funding and reimbursement (Felton, 2002).

Once in place, Project Liberty included an extensive media campaign, crisis counseling sessions, and group education sessions. In addition, an existing mental health information and referral hotline called LifeNet was used to link individuals in need with other Project Liberty services. This hotline was staffed by English-, Spanish-, and Chinese-speaking individuals (Wunsch-Hitzig et al., 2002). A unique feature of Project Liberty compared to previous CCP-funded programs was that it allocated funding for evaluation of its efforts. Initial data from staff logs indicate that minority populations were provided services at proportionate rates and that approximately 9 percent of service recipients were referred for further mental health services (Felton, 2002). This increase in referrals for traditional mental health care created a strain on the existing mental health system of New York State, which was already experiencing budgetary constraints. Additionally, federal assistance programs did not fund such care.

In addition to the Project Liberty initiative, other sources of assistance for recovery from the psychological impact of the attacks were utilized. The American Red Cross and the September 11th Fund (a charitable foundation established on the day of the attacks to assist survivors) implemented a program to provide reimbursement for long-term mental health care including psychotherapy, hospital care, medication, and substance abuse programs for family members of victims, people injured in the attacks, or residents of lower Manhattan who were displaced due to the attacks (September 11th Fund, 2003). However, this program is limited in the type and amount of care it can provide. Furthermore, given the scope of the psychological consequences of the attacks, services may not be available to all who need more intensive intervention since this program is not open to the general public as is Project Liberty. As noted earlier, the U.S. Department of Education through its Project SERV program provided $4 million directly to the New York City Board of Education. Experts in the area of children's mental health advised the city's Board of Education on the types of responses to expect from students, teachers, and families and how best to coordinate the use and training of mental health professionals responding in New York City school communities. The experts also will

help to develop a plan for the appropriate and efficacious use of Project SERV funds (U.S. Department of Education, 2001).

The mental health response provided by Project Liberty and others was unprecedented in its scope and focus. Concerns that have been noted about this mental health response are similar to those voiced after the Oklahoma City bombing. These concerns include the lack of qualified mental health professionals trained in disaster mental health, the lack of a developed infrastructure for rapid implementation of a broad-based public mental health plan, limited knowledge about what interventions may be most effective, and limited funding for long-term intensive mental health care.

Responses in the Washington, D.C., Metropolitan Area

After the attack on the Pentagon, the number and diversity of jurisdictions involved made responding to psychological consequences particularly complex. The Pentagon is located in Arlington County, Virginia, and the attack involved a number of nonmilitary individuals (e.g., passengers on the hijacked plane). As discussed earlier in this chapter, the local area government generally has responsibility for the overall response to disasters within its jurisdiction. The Pentagon is, however, operated under the authority of the Department of Defense, with its own command structure and health care system (see above). As in other disasters, there was outpouring of generosity from individuals wanting to contribute to response; mental health providers from both the public and the private sector volunteered their time to assist.

As with the response in New York City, the Red Cross played a central role in the provision of services immediately after the attack to both survivors and emergency responders. The immediate response by the Red Cross was managed by local Red Cross leaders; national-level leaders assumed leadership for the response once they were able to get to the area (closure of all area airports hindered their ability to reach the scene). Psychological support services were provided at the attack site at the Pentagon and at Dulles airport, but shortly after the attack, these multiple sites were consolidated into the Pentagon Family Assistance Center, which was based in a nearby hotel. The Department of Defense—rather than the Red Cross as would typically be seen with aviation disasters—led this effort in order to ensure that federal security concerns and the needs of criminal investigation could be met (Huleatt et al., 2002).

A source of confusion during the immediate response was the changing security environment at the site of attacks. This affected who was permitted to provide services at the Pentagon staging area. The diversity and

number of agencies and individuals who responded immediately after the attack led to uncertainty about who was in charge and to some duplication of efforts since different agencies were unaware of the services offered by others. Similar to past experiences, another issue that arose was inconsistency in the credentials and experience of mental health providers (Metropolitan Washington Mental Health Community Response Coalition, 2002).

Longer-term responses quickly became active. The Military Health System of DoD established an ongoing program, termed Operation Solace, designed to provide mental health services to active duty service members, Pentagon employees, and family members in order to minimize any long-term psychological consequences of the attack. This program was based in part on the experiences of Project Heartland in Oklahoma City and focused on four different levels of intervention: community, unit or workplace, primary care, and specialty mental health clinics (Hoge et al., 2002). It was characterized by direct outreach both in the workplace and in primary care visits, during which individuals thought to have possible psychological consequences were referred for further care. Operation Solace was responsive to needs for confidentiality and sought to avoid "premature medicalization" of normal reactions to the traumatic experience of the attacks (Hoge et al., 2002).

Several community-based counseling services were established through the FEMA–SAMHSA CCP in both Washington, D.C., and northern Virginia. One of these, the Community Resilience Project of Northern Virginia, was formed based on FEMA grants to a number of the affected counties in Virginia. These programs remain active today and address distress responses related not only to the attack on the Pentagon but also to the anthrax attacks, the war in Iraq, and the general threat of terrorism. This program provides services consistent with the CCP model of response, seeking to normalize reactions to traumatic experiences and focusing on community outreach, supportive counseling, education, and referrals for other forms of assistance when needed. After the September 11, 2001, attack, the Community Resilience Project in Arlington County conducted community support meetings at which individuals could share their experiences of the attacks and also identified people in need of services and provided education by going door-to-door in the community and presenting to groups. None of these efforts have been systematically evaluated for their effectiveness because the funding provided to establish the Community Resilience Project of Northern Virginia did not include support for evaluation.

A similarly designed CCP-funded program was established in the District of Columbia. This program, called Project DC, is ongoing, and provides individual counseling, support groups, outreach, and education.

Approximately 20 ongoing education and support groups for youth are based at recreation centers and boys and girls clubs, and focus on the relationship between anger and fear. Project DC addresses both the indirect and direct victims of the attack on the Pentagon, the anthrax attacks, and the sniper attacks of October, 2002: those who were injured or knew someone who was injured or killed; those whose workplace or school was evacuated during any of these events; those experiencing economic effects due to terrorism, particularly low-income immigrants; and those affected by ongoing tension related to the risk of terrorism in Washington, D.C. (personal communication, Shauna Spencer, Washington, D.C., Department of Mental Health, May 1, 2003). Project DC, like Project Resilience, has been unable to evaluate its efforts given limitations in funding.

A central weakness in the response to the September 11, 2001, terrorist attack on the Pentagon was related to issues of command structure and communication among the different agencies and individuals responding. Although many services were provided, the efficiency and effectiveness of response were hindered by the lack of a central contact point to direct the response; inadequate communication between and among civilian and military agencies contributed to parallel services and duplication of efforts (Metropolitan Washington Mental Health Community Response Coalition, 2002).

Response to Anthrax Attacks in the Fall of 2001

The anthrax attacks that occurred during the fall of 2001 highlighted a number of unique issues that require the consideration of those responsible for responding to psychological consequences. Because the anthrax events were not considered a national disaster, the FRP was not invoked. Instead, the National Oil and Hazardous Substances Pollution Contingency Plan (National Contingency Plan) dictated the federal response. This plan is invoked for occurrences such as oil spills and does not specify clear priorities or responsibilities for responding to psychological consequences. The unique jurisdictional nature of the anthrax events in the Washington, D.C., metropolitan area made responses particularly complex. The Washington, D.C., Department of Public Health and Metropolitan Police Department were activated, as was the federally operated United States Capitol Police Department, which has jurisdiction over the Capitol building complex (and some, but not all, of the surrounding residential areas), where some of the contaminated letters were received. In addition, the involvement of the entire United States Postal Service brought the issue under federal jurisdiction. The role of the CDC, the central public health agency in the United States, was unclear. These overlapping jurisdictions resulted in confusion about the locus of responsibility

and created uncertainty among the public and the affected workers about how the event as a whole was being addressed and how potentially exposed individuals should obtain assistance.

Because a bioterrorism attack with the anthrax bacteria was unique in the experience of most responders, there was some initial uncertainty concerning who should receive testing or prophylactic treatment with antibiotics. A lack of counseling services to address anxiety and fear in individuals who went to testing centers but were not given prophylactic treatment has been noted as a weakness in the response to the psychological consequences of the anthrax attacks (Metropolitan Washington Mental Health Community Response Coalition, 2002). Concerned members of the public overwhelmed the resources of public health departments throughout the country. Many public health departments have provisions to set up emergency hotlines to provide information in such circumstances, but they are not equipped to provide supportive counseling. Project DC does provide outreach and counseling to those affected by the anthrax attacks, with special emphasis on the Ward 5 area of the city where the Brentwood Postal Facility is located. Prior to the reopening of the facility, Project DC staff members went door-to-door to approximately 4700 residences in the neighborhood to address concerns related to the fumigating and testing for anthrax in the facility (personal communication, Shauna Spencer, Washington, D.C., Department of Mental Health, May 1, 2003). However, Project DC did not become active until March 2002. Resolving the jurisdictional issues and psychological service needs highlighted by the anthrax events is centrally important in preparing for future responses to both actual and hoax events.

GAPS IN THE CURRENT INFRASTRUCTURE

Despite the relatively successful mental health responses by Project Heartland, Project Liberty, and others, there are gaps in the infrastructure that require attention. These gaps can be classified into five general areas:

- Coordination of agencies and services
- Training and supervision
- Public communication and dissemination of information
- Financing
- Knowledge- and evidence-based services

Although these distinctions are somewhat artificial and there is some degree of overlap between categories, they are useful in that they point to specific areas for improvement.

Coordination of Agencies and Services

Coordination of services includes the organization and management of different types of services to individuals with different needs and to the same individuals over time as their needs change. It also encompasses the coordination and training of service providers, communication between different levels of government, and integration of various sources of funding. Coordination of services is a crosscutting issue that affects all levels of psychological response. Specific issues of coordination that have been identified include questions of command and control and the role of diverse service providers.

In the immediate aftermath of a terrorist attack, confusion exists regarding jurisdiction and responsibility for the mental health response, particularly in cases where different authorities overlap such as at the Pentagon. Overlap in activities between numerous agencies and volunteers leads to conflict and lack of a clear command structure.

The perception of who should provide responses for psychological needs is often limited to mental health professionals. However, the population of potential providers may also include health care providers, faith-based professionals, educators, and other members of the community. There is also a need for social services in general since psychological consequences of terrorism may be related to indirect contributors such as economic hardship from losing a job or housing displacement from physical destruction. Current mental health response plans and funding mechanisms are often limited to crisis counseling and outreach and do not specify who will be responsible for making sure that the breadth of population-based needs are addressed.

Questions regarding who has responsibility for various aspects of the mental health response must be answered prior to the chaos of the immediate aftermath of a terrorist attack. Similarly, beyond the issue of who is responsible, all relevant support agencies and organizations must have established, defined, and well-understood roles and an appreciation of the necessity of their participation prior to the event so that the overall response can be facilitated. To this end, further research that investigates the sources and specific results of the widespread lack of coordination may be useful for identifying solutions and planning future responses.

Training and Supervision

Reciprocal licensing across states is a concern. Red Cross Disaster Mental Health Services providers are required to be licensed, and other volunteers often have training and credentials but may not have licensure in the states where a disaster occurs. The practice in NDMS, in which

providers are automatically federalized when activated, is a potential model to adopt. It would be necessary to have a reliable and comprehensive system for tracking mental health professionals; this system would have to consider specific training or experience in disaster response.

The specific training of providers has also been identified as a problematic issue. Mental health professionals responding to terrorism events frequently do not have disaster training or experience. This results in a shortage of skilled mental health providers and increases the likelihood of ineffective, inadequate, or even harmful treatment for survivors. In addition, the FEMA–CMHS CCP generally relies on unlicensed providers. There is a need for structured supervision of such individuals (APA Task Force, 1997). Care should be taken to ensure that any tracking system and/or standards that are implemented remain flexible enough so that they do not impede a rapid response to psychological needs.

Public Communication and Dissemination of Information

Communication activities are especially problematic in the area of pre-event public education; because this type of intervention must occur prior to an event, it cannot be made part of disaster response plans. Communication will also be essential during and after chemical, biological, radiological, and nuclear terrorism events. Because of shared jurisdictional responsibility, the central authority for communication may be unclear, and it is therefore necessary to coordinate communication efforts to diminish mixed messages and confusion on the part of the public. This coordination of communication efforts will be most effective if the necessary relationships are established prior a terrorism event. Furthermore, evidence-based strategies should be used to design public communication messages and mechanisms—in some cases, the evidence-base is lacking and research in the area should be encouraged.

Pre-event public education should not only focus on minimizing panic reactions, but also contain useful information about risk assessments, appropriate action, and need for prophylaxis. As described in Chapter 2, events are more traumatic when they are unexpected, which implies that increased public awareness could mitigate the psychological consequences of terrorism events. However, a tension exists between transmitting useful information, and raising unrealistic fears or promoting complacency in the event of a terrorist attack; additional research is needed in this area. Strategies for successfully increasing public awareness prior to an event include hotlines; prepared statements containing facts, plans, and risks; and pre-event identification of a respected spokesperson (HHS, 2002). The Internet is also increasingly used by government agencies and other organizations for public communication about terrorism prepared-

ness. One example of pre-event public education aimed at reducing psychological distress took place recently in Iowa. In collaboration with the Iowa Department of Public Health, on February 16, 2003, all newspapers in the state included a six-page supplement on smallpox with their Sunday paper (or in a later issue if no Sunday paper was distributed by that newspaper).

Financing

The potential of financial support for responding to the psychological consequences of terrorism has increased recently. For example, the Public Health Security and Bioterrorism Preparedness and Response Act, signed into law on June 12, 2002, provides $4.6 billion to address bioterrorism issues; $1.6 billion of that amount comprises grants to states to improve bioterrorism and public health emergency response, and some portion of those grants will be used for counseling and training in disaster response. However, mental health is not included in any of the focus areas for the new bioterrorism funding, making it difficult for states to concentrate significant resources on preparedness for psychological consequences. In addition, neither SAMHSA or NIMH received new funding in fiscal year 2003 designated for preparedness and planning for the psychological consequences of terrorism.[7]

Government funding for mental health care is time-limited and funding for the evaluation of interventions has been specifically excluded. In addition, much federal support is limited to counseling interventions. Some individuals will require longer-term care that is beyond the scope of the crisis counseling traditionally provided after disasters. This type of care should be part of the overall response plan. The provision of care in Oklahoma City continued for a number of years with support from foundations, charities, and the American Red Cross. Special provisions have similarly been made for the World Trade Center to extend the period of funding for care. Yet in the event that terrorist attacks become more frequent, these unstructured and somewhat unsystematic ways of dealing with the financing of psychological needs will be inadequate. Furthermore, current plans for response fail to address prevention strategies in a systematic way.

Currently, funding often flows through contracted agencies due to familiarity and accountability. Outreach is then limited to an agency-affiliated community base, which may exclude important nontraditional

[7] Congressional Consolidated Appropriations Resolution and Accompanying Conference Report, 2003. U.S. 108th Congress, 1st session. H.J. Res. 2.

providers such as faith-based workers. In addition, some private practitioners, who may have the relevant experience, are unaffiliated and cannot access grant monies. The assumption is often made that long-term mental health services will be provided largely as charitable contributions, through either probono volunteers or extremely low reimbursement. It is more realistic, however, to ensure that funding for long-term mental health care following terrorism events be available to a range of providers at reasonable reimbursement rates. This will make it more practical for many with appropriate skills to be included in the pool of providers.

Knowledge- and Evidence-Based Services

One of the most critical problems in designing a plan to respond to the psychological consequences of terrorism is that the knowledge and evidence base to inform planning, policies, and practice is sorely lacking. We do not know conclusively what interventions work and thus what to recommend as best practices. In some cases, practices that are known to be ineffective or inaccurate continue to be recommended. Specific areas in which evidence is lacking include the following:

- Models for community recovery and resilience building are lacking.
- Early interventions after disasters and terrorism events require further development and evaluation.
- Many preparedness programs and responses are driven by pathological models of mass panic in reaction to crisis. Some research has demonstrated that this likely is not accurate and results in a missed opportunity to call upon community members to enhance responses.
- Additional evidence is needed to ensure that all public communication strategies and education or training programs are effective.
- There is a lack of knowledge on how to prepare and "vaccinate" a population against the fear that results from a terrorist attack.
- The psychological impact of a terrorist attack with weapons of mass destruction remains largely unknown, and current response capabilities for such an event are likely to be inadequate.

SUMMARY

Although a variety of programs and services are in place to respond to psychological issues in a crisis or disaster, issues regarding the coordination of agencies, organizations, and services; training and supervision of providers; communication and dissemination of information; financing of services; and lack of an evidence base to direct these services pose

serious challenges to the nation's ability to effectively and efficiently protect the public's mental health. The infrastructure is not currently focused on planning and preparedness for the psychological consequences of terrorism in the United States. Systematic surveillance for psychological consequences in the population and other strategies for preparedness are not conducted as they are for other important public health issues.

The lack of universal preparedness is due, in part, to the traditional lack of importance placed on mental health issues, a predominant focus on response to incidents rather than preparation for them, and a lack of clear evidence about what can be done to prepare effectively. An increased recognition that the psychological consequences of terrorism constitute a serious and immediate public health issue should help to shift efforts toward preparedness and planning. This new focus not only must include those traditionally seen as responsible for responding to psychological needs, but also must include the range of systems and providers responsible for the health and well-being of the public, such as primary care, schools, the workplace, and others that currently are not fully included in responses. A terrorism event will have broad impact on the public—from those directly to those remotely affected. The focus of response must move beyond traditional clinical services that most people do not require, which are too costly and time consuming to provide, to a broad public health approach that will increase resilience and prepare individuals psychologically for terrorism events.

Finding 3-1: Many mental health professionals do not have specific knowledge with regard to disaster mental health. Training and education emphasizing psychological consequences and methods for response should be provided to professionals within mental health fields, including school-based mental health practitioners such as school counselors, school psychologists, and school social workers.

Finding 3-2: A broad spectrum of professional responders is necessary to meet psychological needs effectively. Those outside the mental health professions, who may regularly interface with the public, can contribute substantially to community healing. These professionals include, but are not limited to, primary care providers, teachers and other school officials, workplace officials, government officials, public safety workers, and faith-based and other community leaders. However, these professionals will require knowledge and training in order to provide effective support. Basic knowledge of psychological reactions, as well as training in sup-

port techniques and recognizing serious symptoms that necessitate referral, should be provided.

Finding 3-3: The workplace is a newly recognized and important environment in which to address public health planning for the psychological consequences of terrorism. Some examples of new occupationally exposed groups include construction workers, postal workers, utility workers, public health workers, and children and teachers in schools. Implementation of universal preparedness is required for the workplace, but specific considerations will be needed for critical occupational sites. Recent terrorism events have created new workplaces and categories of responders and have exposed traditional first responders to new levels of job-related stress and risk.

Finding 3-4: Research following terrorism events presents a multitude of practical and ethical challenges. Utilizing findings from research on other traumatized populations is not an adequate substitute, and support of disaster-specific and terrorism-specific research is necessary to provide information pertinent to the population and its needs for intervention. This research can be facilitated by improving cooperation and coordination among federal funding and regulatory agencies as well as by developing the high-quality methodology necessary for the conduct of these investigations.

4
Developing Strategies for Minimizing the Psychological Consequences of Terrorism Through Prevention, Intervention, and Health Promotion

The preceding chapter reviewed priority needs for preparing for and responding to the psychological consequences of terrorism and the practical challenges in response, and identified gaps in the infrastructure. Interventions are required to ensure that these priority needs are met and gaps are covered. However, as discussed in the literature review in Chapter 2, scientific investigation of interventions to minimize and prevent the psychological consequences of terrorism is in its infancy.

Although little is known about the short- and long-term psychological consequences of terrorism, some information can be gleaned from literature examining the psychological consequences of other traumatic events, such as being a victim of interpersonal violence or of natural and other human-caused disasters. However, some caution is required in making conclusions about terrorism based on these other events. Many elements of terrorism are very distinct from other forms of trauma. The most obvious and salient is the element of intent—the purpose of terrorism is widespread infliction of psychological pain. The type of agent—a threat or purposeful act of violence with conventional, chemical, biological, radiological, or nuclear weapons—can make terrorism particularly devastating. The continued and looming threat of acts of terrorism can prolong the sense of fear and vulnerability. In addition to nature of the event itself, the characteristics of the affected population will dictate prevention and response efforts. The U.S. population is socially, economically, culturally, ethnically, linguistically, and geographically diverse, with a range of life experiences and levels of predisposition to psychological trauma. Combined with varying levels of exposure to a terrorism event, there will be a

multitude of risk factors and psychological consequences that will require a range of interventions. While everyone is vulnerable in some way to these consequences, some subpopulations may be at greater risk. Age, degree of exposure (e.g., first responders, those located at the target of the attack), history of trauma (e.g., refugees, victims of crime or torture, those living in violent neighborhoods), or psychiatric illness will likely affect prevention and intervention needs.

Most research studies investigating terrorism and other disaster events provide little in the way of evidence-based prevention and intervention strategies for addressing psychological needs regarding terrorism events. However, the limits of terrorism data should not prohibit action. This chapter uses the adapted Haddon Matrix to discuss key issues that should be addressed in the event of a terrorist attack, options for systemic strategies, interventions to limit adverse psychological consequences of terrorism, and suggestions for ways to optimize the response to the public's health. Many of these strategies correspond to the ten functions listed as necessary for an adequately prepared infrastructure and also address the five areas identified as gaps in the preceding chapter (coordination of agencies and services, training and supervision, public communication and dissemination of information, financing, and knowledge- and evidence-based services). The interventions discussed in this chapter are based on what is known about responses to disasters, the small but growing evidence about consequences of terrorism events, and reasonable assumptions regarding ways to promote and protect the public's mental health. Discussion points include efforts in prevention; promotion of mental health; and interventions such as screening and assessing needs, treatment, dissemination of information, and training of service providers. Potential interventions to minimize or prevent psychological consequences of terrorism are identified in this chapter. It is noted that many of these proposed strategies lack evidence of efficacy but represent the present consensus of experts. *A substantial need is to evaluate the efficacy of each of these interventions.* Attention to this need, identified in Chapter 3 as one of the significant gaps in the current infrastructure, will help address the critical problems in the nation's ability to plan for and effectively respond to terrorism.

APPLICATION OF THE HADDON MATRIX

The adaptation of the Haddon Matrix to the psychological consequences of terrorism offers a useful way to organize and categorize components of the mental health, public health, medical, and emergency response systems for prevention and intervention. The matrix provides a means to categorize known and hypothesized interventions. Community-

TABLE 4-1 Model for Organizing Responses to Terrorism Within Various Phases and Factors Involved in the Events

Phases	Factors		
	Affected Individuals and Populations	**Terrorist and Injurious Agent**	**Physical and Social Environment**
Pre-Event			
Event			
Post-Event			
End Results			

and population-based strategies are crucial for the success of these efforts to ensure the public's psychological health prior to and following terrorist attacks. The process presented here may also have value beyond terrorism events to include violent and traumatic events that occur with great frequency in our society. Employing strategies for these incidents may also render the nation better able to respond to terrorism. As developed in Chapter 1, the basic model for examining psychological responses is shown in Table 4-1.

The expanded model in Table 4-2 adds an additional dimension within each cell to reflect interventions at the biological–physical, psychological, and sociocultural levels. The table offers an example of a public health plan to assist in preparation for and response to the psychological consequences of a terrorism event utilizing phases and factors adapted from the Haddon Matrix. As discussed in Chapter 1, the model's pre-event, event, and post-event also correspond to the Department of Homeland Security's emergency management program of preparedness, mitigation, response, and recovery.

Factors related to the terrorist and injurious agent are not addressed here. The intent of illustrating these factors in the table is to present an example of the full array of factors that warrant the joint attention of all systems responsible for the health and safety of the public. The committee presents this more comprehensive strategy to illustrate the critical point that psychological consequences must receive comparable attention to other consequences in responses to terrorism. The reader is referred to *Terrorism: Perspectives from the Behavioral and Social Sciences* (NRC, 2002c) and *Discouraging Terrorism: Some Implications of 9/11* (NRC, 2002a) for a

TABLE 4-2 An Example Public Health Strategy: Preparing for the Psychological Consequences of Terrorism. Example of a public health plan to assist in preparation for and response to the psychological consequences of a terrorism event utilizing phases and factors adapted from the Haddon Matrix.

	Factors		
Phases	**Affected Individuals and Populations**	**Terrorist and Injurious Agent***	**Physical and Social Environment**

Pre-Event	**Biological–Physical**
	• Stockpile vaccinations, antibiotics, antidotes
	• Train emergency, medical, and public health professionals in spectrum of skills necessary to respond to incidents
	• Conduct baseline health surveillance
	Psychological
	• Integrate psychological and mental health into all public health and emergency preparedness plans
	• Design and implement psychological first aid training
	• Prepare materials for media and public education
	• Identify groups of special interest
	• Train all relevant health professionals in disaster mental health and psychological consequences of terrorism
	• Train other relevant service providers
		Biological–Physical
		• Make chemical, biological, radiological, and nuclear weapons difficult to obtain
		• Decrease information and dissemination about how to produce weapons
		• Make buildings safer, and trains and planes less likely to be hijacked, and develop inherent detection systems in potential agents
		• Decrease available resources and disrupt terrorist groups
		Psychological
		• Describe prevention efforts in biological–physical areas and achieve positive publicity
		• Explain consequences for terrorists
		Sociocultural
		• Study conditions that foster terrorism
		• Make certain there are lawful ways for terrorists to communicate legitimate concerns
			Biological–Physical
			• Ensure that buildings, planes, water, food, etc., are tested and protected
			Psychological
			• Develop an effective risk communication strategy
			  • Identify and train spokespersons
			  • Inform the public about prevention and safety efforts
			• Provision of information that educates populations about expectable responses and coping strategies that would increase community resilience.
			Sociocultural
			• Develop terrorism response plans
			• Ensure the community is appropriately represented in pre-event planning
			• Address and ensure equity in the allocation of resources

	Sociocultural • Identify population characteristics important to intervention • Develop geo-mapping of populations, potential targets, and community resources • Identify and implement methods for educating the public • Ensure adequate public health and mental health care systems		
Event	**Biological–Physical** • Implement public health–mental health response • Provide basic needs • Provide appropriate interventions **Psychological and Sociocultural** • Implement psychological first aid • Affected population responds appropriately and takes action to minimize exposure to agent, including implementing disaster behaviors • Distribute information appropriate to the event	**Biological–Physical** • Develop systems to interdict during an event • Describe to the public the available organizational and communication systems **Psychological and Sociocultural** • Consider how to mobilize trauma workers and notify survivors of services in the absence of functioning communication systems	**Biological–Physical** • Respond to alarms • Respond to surveillance system • Dispatch emergency personnel and involve public health and medical care systems • Monitor immediate threats **Psychological and Sociocultural** • Communicate risk and proposed response effectively

continued

TABLE 4-2 Continued

Phases	Factors		
	Affected Individuals and Populations	**Terrorist and Injurious Agent***	**Physical and Social Environment**
Post-Event	**Biological–Physical** • Minimize secondary consequences • Triage and treat as necessary • Recover, identify, and bury dead **Psychological** • Continue psychological first aid • Conduct individual, group, and population assessments to identify specific needs in response to event including the assessment, triage, and treatment of psychological injury • Consider intervention needs of special populations **Sociocultural** • Communicate that preparedness helped decrease impact of the attack • Publicize availability of targeted services to appropriate segments of the population • Produce public information and warnings • Promote family and community cohesion	**Biological–Physical** • Respond quickly to seek out and punish those responsible • Decrease availability or toxicity of agents used in the attack so that the next attack will not be so deadly **Psychological** • Communicate deterrent information **Sociocultural** • Identify better ways to decrease activity of terrorists	**Biological–Physical** • Evaluate effectiveness of emergency plan and disaster response • Mitigate ongoing health risk and secure physical infrastructure • Monitor ongoing threat **Psychological** • Limit secondary exposure • Adjust risk communication, emphasizing the positive • Devise a public mental health strategy to assist communities, groups (workplace and schools), families and individuals to cope with trauma reminders Sociocultural • Establish strategies for community healing

Desired end results	• Mitigate or prevent adverse consequences including: ° Distress ° Negative behavioral change ° Psychiatric illness ° Poor job performance or loss of job ° Physical injury • Increase positive adaptive behaviors • Facilitate posttraumatic growth • Increase empowerment	• Minimize loss of life and impact of disease processes • Minimize spread of infectious agents • Minimize destruction of buildings and infrastructure • Provide an environment that allows for rapid recovery and rehabilitation	• Minimize disruption in daily routines of life • Enhance community cohesion

* Although factors related to the terrorist and injurious agent include elements that may have psychological consequences (for example, decreasing information and dissemination about how to produce weapons may make the public feel more safe and decrease anxiety), they are not addressed in this report. These are factors likely addressed by the infrastructure's law enforcement sector, rather than public health, emergency, or medical services. The intent of illustrating these items in this table is to present an example of the full array of factors that warrant the joint attention of all systems responsible for the health and safety of the public in preparation for and response to terrorism events.

discussion of the nature and determinants of terrorism and what terrorists hold in value.

The remainder of this chapter focuses attention on interventions targeting biological–physical, psychological, and sociocultural factors at the level of (1) affected individuals and populations and (2) the physical and social environment at each of three phases: pre-event, event, and post-event. Interventions directed at the physical–biological effects of terrorism are discussed in greater detail in *Biological Threats and Terrorism: Assessing the Science and Response Capabilities* (IOM, 2002a); *Chemical and Biological Terrorism: Research and Development to Improve Civilian Medical Response* (IOM–NRC, 1999); and *Making the Nation Safer: The Role of Science and Technology in Countering Terrorism* (NRC, 2002b).

PRE-EVENT PHASE

Many of the infrastructure functions discussed in Chapter 3 will be initiated during the pre-event (or preparedness and risk mitigation) phase of an event. Adequate preparation and mitigation of risk will be crucial to help decrease the physical, psychological, social, and economic disruptions caused by terrorism events. Functions involved during this phase include the provision of resources to ensure safety (function 1), skills and interventions to promote community resilience (function 2), education and materials for public, media, and service providers (function 7), locating individuals/groups of special interest who may require assistance (function 10), communication of information to the public (function 7), training of service providers (function 8), and beginning surveillance of health and psychological consequences (function 3). By initiating these actions during this phase, the capacity of the infrastructure to adequately handle service demands (function 9) can be strengthened.

Affected Individuals and Populations

Biological–Physical

Attending to the physical health and safety of the public is identified as a necessary function for the infrastructure to provide. These activities may reduce psychological casualties by increasing the public's confidence and sense of mastery and reducing fear through communicating convincingly to the public that the community is ready in the event of a bioterrorism event. Vaccinations, antibiotics, antidotes, and other supplies should be stockpiled. Training is needed for emergency, medical, and public health professionals in the spectrum of medical and mental health skills necessary to respond to incidents. Both of these activities will help

to reduce psychological consequences through reduction of injuries that contribute to psychological casualties. Pre-event biological–physical activities also include surveillance of population health and mental health to establish baseline prevalence rates for identifying physical and mental vulnerabilities and for comparison with post-event findings.

Information and training on implementing effective disaster behaviors should be provided to the public in the pre-event phase. These include early recognition of an attack, knowledge related to survival and basic sustenance (evacuation, safety, knowledge of gas mask use, how to obtain antibiotics, shelter, food, environmental assessment), help-seeking indications (when to go for help or wait) and directions (public health, emergency medicine, medical care systems), effective evacuation strategies, and victim rescue procedures. This information will further increase the confidence of in the population by enhancing individual perceptions of self-efficacy and mastery.

Psychological

Integration of Psychological and Mental Health into Public Health Planning. The psychological consequences of terrorism are an important determinant of the continuity of society, economic resiliency, health care utilization, and perception of threat and safety. To address the prevention, health care, and promotion needs related to psychological consequences of terrorism, this area must be integrated into national, state, and local planning. This will help ensure that the infrastructure is better able to meet needs and that gaps will be minimized. At the federal level, research support, education of health care providers, and development of model intervention plans can aid state and local planning. In order to improve responses for psychological consequences, a central focus of the new national response plan should be the coordination of efforts across the Centers for Disease Control and Prevention (CDC), National Institute of Mental Health (NIMH), and the Substance Abuse and Mental Health Services Administration (SAMHSA) to comprehensively address needs for response, research, and health care provision. This type of coordination of efforts across these and other agencies and with state and local services will help to address the gaps in coordination of agencies and services discussed in the previous chapter. In order to begin integrating mental health principles and needs into the broader public health consciousness with regard to terrorism preparedness and response, these principles must be part of public health disaster plans.

Design and Implement Psychological First Aid Training. The nation's infrastructure should provide interventions and programs to promote in-

dividual and community resilience and prevent adverse psychological effects. Psychological first aid is a group of skills identified to limit distress and negative health behaviors (e.g., smoking) that can increase fear, arousal, and subsequent health care utilization. Every culture and community has its own ways of coping with stressful events and managing reactions to difficult moments in life. In the past decade, there has been a growing movement in the world to develop a concept similar to physical first aid for coping with stressful and traumatic events in life. This strategy has been known by a number of names but is most commonly referred to as psychological first aid (PFA). Essentially, PFA provides individuals with skills they can use in responding to psychological consequences of terrorism in their own lives, as well as in the lives of their family, friends, and neighbors. As a community program, it can provide a well-organized community task to increase skills, knowledge, and effectiveness in maximizing health and resiliency.

The success of PFA lies in its development as a potentially preventive measure of more serious psychological consequences. However, no evidence is yet available to assess its efficacy. PFA can be used to deal with the daily stresses of life (e.g., family strife, job stress, the academic and interpersonal challenges faced by schoolchildren). It is in these developments that the skills are tested, practiced, refined, and generally maintained as an active part of daily life. In this way, PFA may provide daily benefit, whether there are terrorism events or not. The development and implementation of PFA as a national strategy can serve as an intervention to provide possible benefits in dealing with the psychological consequences of smaller-scale random acts of violence discussed in Chapter 1 (disgruntled employees shooting and killing coworkers and supervisors, serial killers stalking women or children, racially motivated killings, hate crimes, and murder and violence occurring in most of our major urban areas). PFA generally includes education about normal psychological responses to stressful and traumatic events; skills in active listening; understanding the importance of maintaining physical health and normal sleep, nutrition, and rest; and understanding when to seek help from professional caregivers (NIMH, 2002). It is crucial that an evidence base for PFA be developed as well as models for training. As the evidence base is developed, education regarding substance use and abuse issues should also be included. Developmentally appropriate models are needed that be applied to individuals across age levels and racial/ethnic and cultural groups.

Prepare Materials for Media and Public Education. During the pre-event phase dissemination of information to the public and media is essential. To prepare effectively for a terrorism event, the population will likely be

helped by the provision of concrete information about what to expect and what to do. The public should be provided specific plans of action and simple tasks and skills. During the pre-event period, it is important to help members of the public assess the potential risk to themselves and their families and determine what they can do before an event to protect themselves. This preparation will require widespread education with appropriate language and cultural considerations. Planning should include assessment of the most effective channels of communication for different segments of the population, such as radio, internet, television, billboards, and newspapers. Education materials should address various terrorist threats including explosives and chemical, biological, radiological, and nuclear (CBRN) events. People should be provided information about devising a family plan for reunification after an event, specifying emergency contacts, stocking emergency supplies, and obtaining additional information (e.g., hotline numbers, Web sites, radio and television stations, identification of spokespersons [at the federal, state, and/or local level] who are appointed to communicate information). In the case of a terrorism event involving CBRN, other information should be communicated, including clear guidelines on recognition of symptoms of exposure, reduction of the risk of exposure to infectious agents, reduction of the spread of agents, and whom to contact or where to go if exposure is suspected or when family reunification is not permitted. Controversial information should be clarified, such as the value and potential side effects or hazards of vaccinations, use of gas masks, and sealing homes to create "safe rooms." Materials should offer understandable explanations of why a strategy is or is not recommended and educate the population to expect that conflicting answers may be heard while the best solution is being identified.

Providing information about ways for people to physically protect themselves is one side of public information. To help prevent fear and limit uncertainty, the public should be made aware of normal psychological reactions to threats of violence, such as worry, anxiety, and difficulty concentrating, and how preparedness can help limit fear and promote effective coping.

Materials should be adapted to local communities, cultures, and ethnic groups. Resources should address the language needs of various populations and consider variations in living environments. For example, CBRN terrorism precautions should be explained for people who live in apartments and do not have basements or interior rooms without windows; people who may need to evacuate but do not own automobiles; and people who are recent immigrants and may not be familiar with community services. The goal of public education materials is to achieve self-efficacy and enhance confidence in society's ability to help protect it.

There is some evidence to suggest that panic in the event of terrorist attack, particularly bioterrorism attacks (which may be more anxiety provoking because these threats are more unfamiliar and undetectable even though they can be very dangerous), is rare and preventable (Glass and Schoch-Spana, 2002). The public has the capacity to adapt and cooperate with officials in responding to threats and disasters. During the pre-event phase, the public should be made to feel that it is an active participant in preparedness, and community organizations that serve diverse populations should be involved in the development and dissemination of information. It is important that the public be educated prior to an attack. The population should be aware not only of what to do to protect individuals and groups, but also of what is being done at federal, state, and local levels to prepare and respond.

In addition to materials for the general public, basic preparedness information should be developed for and provided to the media and professionals who will interface with the community and can help to foster a sense of self-efficacy. The latter include health and mental health professionals, school officials, and workplace administrators or human resource departments. In addition, leaders in the faith-based community and civic organizations should be partners in preparations. Materials that are developed for lay and professional audiences should relay congruent descriptions and preparations (with the understanding that the level of detail and sophistication of information may vary) to avoid publishing contradictory information.

Identify Groups of Special Interest. The ability to identify and locate individuals who have not utilized mental health services but who may need them will be important. Identifying groups of special interest before an event occurs will make these efforts easier to achieve in the post-event phase. Many individuals within these groups may not require specialized mental health services after an event, however, strategies for education and promotion of positive coping and adaptation will be of benefit.

Children. Since compulsory education places school-age children in classes for an average of six hours per day, 180 days per year, schools become essential components of community preparedness, response, and recovery. Should a terrorism event occur during school hours, school personnel serve as de facto emergency response workers, responsible for the food, shelter, and physical and emotional well-being of the children in their care. Safety issues and contingency plans that are addressed prior to a crisis or terrorism event can give reassurance to parents whose children may require site evacuation, quarantine measures, reunion protocols, or sheltering in place for 24 to 72 hours. In addition, schools may be an effective way to provide information to parents about their own safety and

well-being as well as that of their children. Safe schools and emergency response plans that are carefully considered, with input from parents and teachers and subsequent communication to students, create the sense that children will be physically and psychologically cared for and that they will not be left alone. The latter two factors are essential to the psychological well-being and recovery of victims of disaster and mass violence.

From an organizational perspective, the U.S. Department of Education Office of Safe and Drug-Free Schools identified two important lessons learned about school response and recovery after the Oklahoma City bombing (U.S. Department of Education, 2002). One involves preparedness and the discovery that not every school is adequately prepared to deal with the full extent of a crisis of any kind; the other, that there are steps a school can take immediately to be better prepared. Regardless of the type of crisis, whether a school shooting or an event such as September 11, 2001, the following steps are important for school personnel to include in developing a school safety plan. Schools should have a comprehensive school safety plan that addresses a wide range of crisis situations.

- Develop plans with input from public and private agencies (for example, local law enforcement, emergency services, public health offices, Red Cross, mental health clinics) and ensure that plans communicate goals and assignments.
- Include a strategy to overcome potential communication difficulties with input from telecommunications experts.
- Conduct practice drills, based on the plan.
- Develop detailed procedures to provide accurate and timely information to students, parents, and faculty.
- Review plans and policies on a regular basis to ensure that they incorporate the latest areas of concerns (for example, terror hoaxes) as well as the latest technology (for example, cell phones).
- Include strategies to address the short- and long-term health and mental health needs of students, faculty, and parents.
- Initiate relationships with local health and mental health providers, and document roles and responsibilities in time of crisis.
- Include a process for screening persons who wish to volunteer during a crisis.
- Designate and train a person or group to act as lead official(s) for response to crisis situations.
- Work with mental health service providers, teachers, and parent groups to establish guidelines for activities that respect the developmental capacity of students to determine the most appropriate actions to take after a traumatic event occurs.

Since the majority of psychological needs of children will be met within the school setting, the educator or caregiver and parents will need support to understand the importance and impact of multilevel school-based mental health approaches and services in preventing, responding, and recovering from terrorism-related trauma.

The challenge will be to develop a strategy to incorporate the psychological needs of students and staff into safe school plans and identify the types of mental health services available to meet the specific needs of students, staff, and communities. The strategy also must include utilizing promising school-based models for readiness, response, and recovery and elements of effective mental health models that help schools prevent and respond to trauma.

*Employees in the Workplace***.** The prime targets for terrorist attacks are often workplace sites. The 1995 Oklahoma City bombing; 1993 and 2001 World Trade Center attacks; 2001 Pentagon attack; and 2001 anthrax attacks that hit news organizations, Capitol Hill, and postal employees are examples. The management of distress in the workplace is important to ensure productivity. Organizations would benefit from incorporating mental health issues into Continuity of Operations or Business Continuity plans. Mental health issues should be an important part of these plans in order help organizations remain operational in the face of personal stress. In addition, consideration of appropriate disaster drills and responses is critical and includes potentially having floor leaders (with backups) to make decisions rather than rely on group process and the presence of alternate alarm systems (no electricity or loss of audio capability can impair many alarms). Preparation for sheltering in place can be extremely important for large organizations, where planning needs may include supplying employee medications, stocking food supplies, and developing policies for handling the many parents who will want to leave the premises to go to their children. Pre-event planning to centralize information sources could include establishing off-site family support centers that would have information from all local hospitals. Planning for a locator system to aid in finding employees and linking them with loved ones can be the most effective early intervention after a terrorist attack. In addition, it may also be important for organizations with employees who travel frequently to developing policies for addressing behaviors that may affect the workplace such as refusal to fly in airplanes or to travel. Leadership training can aid business leaders in understanding the needs related to grief, bereavement, and reconstituting employee groups.

First Responders. The community of traditional first responders, including emergency medical personnel, firefighters, and police, is a unique group with respect to disaster preparations. First responders are exposed routinely to difficult and stressful situations and in the event of terrorism

will be directly exposed to the devastation that results from an attack. First responders are expected, as part of their jobs, to take on known and unknown risks. In addition to these first responders, other professionals such as health care providers will be directly exposed to recognized and unidentified hazards, particularly in the case of CBRN terrorism.

An area of difficulty for first responders and other providers may be concern about how their families will manage in a crisis without them or how families will be protected and supported in the event of the responder's injury or death. Responders and providers also will likely have concerns about the safety of their families while they are at the scene of a disaster. This may impact a first responder's ability to perform his or her duties. These issues are similar to those facing members of the armed forces who are deployed and face risk of death or injury. The armed forces provide a number of services to care for families while soldiers are deployed, including family readiness groups, and access to medical care, child care, and other services. The military is continuously challenged to enhance the safety of its forces, provide resources for families, and provide ways for soldiers to communicate with their families, which give comfort to all parties. Leadership in first-responder communities may look to military models to develop and improve the support services (both social and psychological support) necessary to facilitate the efforts of their employees.

Ethnic Minority, Refugee, and Immigrant Populations. In addition to universal preparedness, including the provision of coping skills, building strengths and connections in the community, and distributing education and preparedness materials, minority, refugee, and immigrant populations may require further resources to prepare adequately for a disaster. For example, refugees or recent immigrants may be unfamiliar with or not fully understand community resources or may have fears or concerns based on previous traumatic experiences. A survey of recent immigrant school-aged children in Los Angeles revealed that one-third had clinical symptoms of posttraumatic stress disorder (PTSD) as a result of witnessing or being victims of violence (Jaycox et al., 2002). Following the September 11, 2001, terrorist attacks, a survey of East African immigrants revealed that 50 percent of respondents reported feeling less safe because of their ethnicity or religion, 65 percent had less faith in the government's ability to protect them, and 67 percent worried about their immigration status (Jaranson, 2002). These feelings may affect minority and immigrant community members' responsiveness to prevention and intervention strategies.

Approaches to preparedness and response must be culturally relevant. Racial and ethnic minorities are less likely to have access to physical and mental health care and the care that is received is more likely to be

poorer in quality (HHS, 2001a; IOM, 2002b). Culture affects the ways in which psychological reactions and symptoms are described and expressed as well as how their meaning is interpreted by the individual. Not only does culture affect the expression and meaning of psychological reactions, but the ways in which people cope and adapt to difficulty and how likely they are to seek care and from whom (for further discussion see the Surgeon General's report on Mental Health: Culture Race, and Ethnicity, HHS, 2001a). Members of racial and ethnic minority groups are more likely to delay seeking treatment and are less likely to seek out conventional mental health services. Rather, help may be sought from primary care providers, faith-based leaders, and traditional healers.

Efforts should be made to enlist the support of community leaders and/or those who are trusted by the community to help in the preparation and provision of culturally appropriate support services. These populations may require specifically adapted and targeted materials that are in their languages and sensitive to their cultural, ethnic, religious, and worldviews, as well as providers who are sensitive to their needs and able to function effectively in their languages. Ongoing efforts should be made to recruit mental health and other professionals (including paraprofessionals) who reflect the diversity in the nation's communities.

Elderly and Veterans. Special considerations may be required to address the concerns and needs of senior citizens, who may be more isolated and have more health needs than the general public. Issues regarding evacuation and other safety precautions as well as potential effects of CBRN agents on individuals with compromised health or chronic health conditions should be addressed. Door-to-door and other focused outreach efforts may be required to provide information and education. Veterans may also require special considerations because their previous experiences with the trauma of war may make them more vulnerable to the psychological consequences associated with a terrorism event.

Train All Relevant Health Care Professionals in Disaster Mental Health and Psychological Consequences of Terrorism. Training of service providers in medical, public health, and emergency services to respond to a terrorism event is identified by the committee as another function to be provided by an effective infrastructure. Health care providers (for example, primary care practitioners, pharmacists, home health care providers) and mental health care providers require knowledge of expected community responses, resources, and specific elements of intervention and management of distress, behavioral change, and psychiatric illness. Primary care providers can expect patients to have somatic symptoms for which no diagnosis can be determined (Ursano et al., 2003), referred to as multiple unexplained (or idiopathic) physical symptoms (MUPS/MIPS).

These symptoms may represent physical illness, concern about toxic exposure, or anxiety and depression. Education in differential diagnosis, treatment, and management is needed.

The Red Cross provides extensive training in the effects of disasters on individuals and communities and the needed disaster mental health support systems. Several academic programs are also available for education and training in disaster responses of communities and mental health needs. In addition, SAMHSA and the professional societies provide education programs for a limited number of mental health providers.

Train Other Relevant Service Providers. Given the number of people who may experience psychological consequences related to a terrorist attack, most without severe symptoms, it is not reasonable to assume that mental health professionals should meet all needs. There is a wealth of ancillary professionals, including teachers and faith-based leaders who can help alleviate psychological distress. However, these professionals, like those mentioned in the section above, should receive some training regarding common psychological reactions and symptoms associated with exposure to traumatic events and develop a basic knowledge of supportive techniques such as listening to fears and anxieties in order to assess the community. Ancillary professionals should also be trained to recognize more severe symptoms that necessitate more rapid and sophisticated interventions as well as how and to whom to refer these individuals.

Sociocultural

Identify Population Characteristics Important to Intervention. Using a public health model, syndromic surveillance of psychological symptoms in the population should be monitored. In order to begin developing strategies to prevent psychological disorders and promote mental health, the World Health Organization (2002) called for information in several areas that are important to monitor. These also relate to terrorism events:

- Prevalence and incidence of psychiatric disorders
- At-risk individuals and populations
- Health and socioeconomic outcomes of psychological problems
- Community perceptions of risk and needs for prevention
- Biological, psychological, and social risk and protective factors
- Comorbidity

Surveillance is crucial to efforts to limit the psychological impact of terrorism because it will allow for the targeting of interventions after trau-

matic events. For example, research after the 1995 Oklahoma City bombing suggests that there are number of risk factors that may predict psychiatric illness. Preexisting psychiatric illness, previous trauma, and other negative life events are among factors that may increase the likelihood of a person developing PTSD after a terrorism event (North et al., 1999). Syndromic surveillance of these population characteristics and types of symptoms may allow for more rapid identification of individuals who might benefit from psychiatric and other forms of intervention and for deployment of services that will meet varying societal needs. Population estimates of psychiatric illness such as PTSD and other anxiety disorders, depressive disorders, personality disorders, and substance-related disorders would provide an indication of population needs. Surveillance of possible indicators of substance use for later comparison with post-event levels would be useful; these indicators might include levels of alcohol consumption, and sales of alcohol, benzodiazepines, antidepressants, and pain killers. In addition, other social variables, such as the availability of community and family supports or the presence of marital and family discord or violence, may further help to identify needs. Precise estimates of the concentration of families with children; racial and ethnic minority, immigrant, and refugee groups; the elderly; and veterans will allow for identification of populations with more specific needs, such as providers with knowledge of the special considerations required by these groups.

Issues regarding confidentiality are important to consider in screening and monitoring psychological symptoms. Essential ethical issues have been addressed in the reporting of other sensitive public health concerns such as HIV/AIDS. Strategies used to assess and track sensitive illness may serve as examples of ways to approach surveillance of psychological symptoms.

Develop Geo-Mapping of Populations, Potential Targets, and Community Resources. The identification of community services prior to an event will allow the nation and its localities to assess the adequacy of resources that are available to meet mental health and substance-related treatment needs after a terrorist attack. Service settings such as community mental health clinics, outpatient and inpatient hospital services, substance abuse treatment centers, concentration of private practitioners, food banks, and other social services should be identified and categorized. Comparing the location and concentration of these services with population estimates of psychological symptoms, psychiatric disorders, and concentrations of high-risk groups will allow for early identification of areas of disproportionate need.

Identify and Implement Methods for Educating the Public. To facilitate the effective and coordinated dissemination of information, public health, medical, and mental health professionals should have long-standing and well-established relationships with the media. These pre-event communications will help facilitate smooth dissemination of information to the public and help prevent release of conflicting or confusing information, which may create fear and anxious behaviors in the population. This may demystify and create an educational foundation. As discussed in the previous chapter's section on infrastructure gaps, evidence-based strategies are needed to design public communication messages and mechanisms.

Ensure Adequate Public Health and Mental Health Care Systems. The capacity to handle a large increase in demand for services to address psychological consequences in the event of a terrorist attack is identified as a necessary function for the adequate preparation for and response to psychological consequences. Various laws and regulations impact on public health and mental health activities, and add complexity to planning and responses. These must be considered in the pre-event planning stage. For example, The Health Insurance Portability and Accountability Act of 1996 (HIPPA) guidelines should be developed for use in the event of a major incident requiring large public health responses.

Independent of the increased demands that may be associated with a major terrorism event, the nation's mental health care system is currently unable to meet the psychological needs of society. The availability of public mental health and substance-related treatment resources for the population is inadequate, particularly in urban, rural, and frontier areas where facilities are scarce, presenting a challenge to providing services for many groups of special interest. Arguably, services are needed most in these areas, where resources are lacking and poverty and its associated stressors are more prevalent. Racial and ethnic minorities, immigrants, refugees, and those in lower socioeconomic strata are disproportionately concentrated in these areas. The impact of job loss and economic consequences of a terrorism event may have a particularly dramatic impact on these communities. A fundamental shift in the national perspective of the value and importance of psychological health and the needs of such populations must occur to ensure the adequacy of systems to serve them. Because of long-standing challenges for mental health systems, the integration of mental health into public health planning becomes important in promoting the utilization of relevant components of the available infrastructure to address the public's health.

Physical and Social Environment

Biological–Physical

Ensure That Buildings, Planes, Water, and Food Are Tested and Protected. Other measures that will attend to the physical health and safety of the public include pre-disaster planning that includes testing the structural integrity of buildings and the safety of airplanes, water, food, et cetera. Adequate detection, alarm, and containment systems should be developed and maintained, and people trained in their use. Requirement of systematic programs to ensure safety may help to provide some reassurance to individuals and the public, thereby alleviating anxiety.

Psychological

Develop an Effective Risk Communication Strategy. Much like the dissemination of educational information discussed above, during the pre-event period, timely and consistent communication of information regarding the prevention of terrorist attacks may help alleviate fear and anxiety and provide confidence in the government's ability to protect the public. This crucial function is a significant gap in the infrastructure, as discussed in Chapter 3. The necessary messages and channels for communication should be developed in the pre-event phase so that they are ready to use during and after the event. The public should be educated regarding specifically where to look for information during a crisis, what to look for (for example, if authorities require public assistance), and what types of warnings may be used to inform them (for example, seasonal education, watches and warnings). It will be important during this phase to establish a tracking system for those who may be evacuated from homes, schools, and other places of employment as well as a registration system for people transported to hospitals. A likely scenario in a terrorism event is anxious individuals (potentially putting themselves at risk by leaving places of safety) searching for children and loved ones.

As an example, media and health authorities have used public health strategies that were learned from the first West Nile virus outbreak in subsequent years; before the summer season began, the public was told to repair window screens, eliminate small pools of water around houses, and wear insect repellent. Then as mosquitoes were studied and shown to carry the virus, and birds and people became ill, the public was repeatedly reminded of these pre-event strategies for protection in addition to being educated about potential signs and symptoms of the disease. The lack of specific treatment for the disease was emphasized, which high-

lighted the need for prevention. Subsequently, as syndromic surveillance and entomologic surveillance demonstrated evidence, the public was warned of large-scale responses such as spraying of insecticides in neighborhoods and the appropriate personal response (e.g., closing windows to limit exposure to insecticides).

Finally, spokespersons should be identified and trained (HHS, 2002). It will be important to establish credible and consistent sources of information. In dealing with matters of safety, the public will likely be very aware of inconsistencies and conflicting information. Effective spokespersons will require skills in how to deliver sensitive information. Training of spokespersons should include an understanding of basic principles from social science disciplines including sociology, social psychology, and community psychology. Knowledge regarding individual and group behavior under stressful situations, and how information is received and perceived, will help officials more effectively communicate with a diverse public. Principles of risk perception (see, for example, Slovic, 1987) will help individuals responsible for the public's health and safety understand the ways in which people assess and respond to risk. This line of research is beginning to be applied to terrorism. For example, a recent study by Lerner and colleagues (2003) investigated how emotions related to the September 11, 2001, terrorist attacks affected individuals' responses to risk. Results revealed that those experiencing more anger had more optimistic beliefs and those experiencing fear had more pessimistic beliefs about risks from both terror- and non-terror-related events. Participants felt that they were less vulnerable to risks than the average person and were less likely to take precautions. In addition to training in principles of communication, salient examples from the recent past may be studied and provide information for teaching and training of spokespersons.

Provide Information That Educates Populations About Expectable Responses and Coping Strategies That Would Increase Community Resilience. In addition to communicating information about physical risk and protection, information regarding the range of potential psychological responses to terrorism events and to the threat of events is important to provide. Much like risk communication provides protective measures, the public would benefit from strategies to increase not only positive personal coping and adaptation, but community resilience as well (for example, volunteering and donating supplies).

Sociocultural

Develop Terrorism Response Plans. Response plans detailing the federal, state, and local agency roles in organizing prevention, detection, and

intervention efforts, including mental health response, should be in place in the pre-event phase. A large representation of the mental health community, including substance-related services, should be involved in pre-event planning. Their expertise will be crucial for integrating needed psychological issues into preparedness plans and may help to improve the coordination of services following a terrorism event.

Ensure That the Community Is Appropriately Represented in Pre-Event Planning. Traditionally, leaders in federal, state, and local agencies develop planning for mental health services. The larger community—that is, citizens, leaders, and consumers of services—should be a part of preparedness and response planning. These individuals, although not experts in financing, organization, or delivery of services, are experts in the needs of the community and informal resources within the community that may augment planned interventions. Development should be a joint effort. Representation of the community may help to promote confidence in plans that are put into place.

Address and Ensure Equity in the Allocation of Resources. As discussed in the previous chapter, financial support for responding to psychological consequences of terrorism is a gap in the infrastructure requiring attention. In the event of a terrorist attack, unstructured and unsystematic methods for attending to financing of psychological needs and the allocation of resources will be insufficient. The equitable distribution of resources is essential to community recovery. Those who are more able to find or reach resources are not necessarily the most in need. Those who make decisions about resource allocation must have input and representation from diverse parts of society to ensure that all elements of a community are heard and responded to. Ombudsmen can serve an important role in providing rapid information in culturally sensitive language on difficult decisions about distribution of resources and timing of resource distribution.

EVENT PHASE

During the event (or response) phase, planning strategies discussed in the previous phase are implemented. Components of the infrastructure are put into place to provide a variety of functions to respond to the immediate crisis. Functions involving provision of resources (function 1), surveillance (function 3), and risk communication (function 7) are critical at this phase. At the level of the individuals and populations affected, basic needs and services are provided for urgent physical and psychological needs of the population. The public makes use of pre-event skills to

facilitate effective responses. At the level of the physical and social environment, detection and monitoring systems as well as public health, emergency and medical systems are activated. Surveillance helps to identify areas of need and effective risk communication is provided for the public.

Level of Individuals and Populations Affected

Biological–Physical

Implement Public Health and Mental Health Response. Information and supplies gathered in the pre-event phase can be utilized to help people during the event and immediate post-event period. Risk communication will keep the population informed and oriented about the level of danger and need to take appropriate actions.

Provide Basic Needs. Basic needs such as physical safety, shelter, food, and water should be made available as soon as possible.

Provide Appropriate Interventions. Interventions should take place to address the immediate needs caused by physical injury and/or exposure to CBRN agents.

Psychological and Sociocultural

Implement Psychological First Aid. During this phase, the affected population should make use of PFA skills and of information provided or taught during the pre-event phase.

Affected Population Responds Appropriately. If the population makes appropriate use of skills provided in the pre-event period, responses may occur quickly and efficiently. Rapid and well-organized responses on the part of individuals, communities, and responders will be particularly important in the event of CBRN attacks.

Distribute Information Appropriate to the Event. The public is given information that will provide for its immediate safety, such as instructions for evacuation or steps to contain agents.

Level of the Physical and Social Environment

Biological–Physical

Respond to Alarms. The goal is for all detection systems, alarms, and

containment procedures to function flawlessly at the time of need. When an attack is detected, people will be directed away from the area of attack, thereby reducing injury's toll. Expeditious and appropriately directed dispatch of emergency personnel can reduce physical damage and thereby minimize psychological casualties.

Respond to Surveillance System. Surveillance conducted in the pre-event phase will allow for responses that are targeted to areas of special need.

Involve Public Health, Emergency Preparedness, and Medical Care Systems. Public health, emergency medicine, and medical care systems should respond in a coordinated manner immediately after the disaster, each communicating relevant information to government agencies.

Monitor Immediate Threats. All immediate threats should be monitored.

Psychological and Sociocultural

Communicate Risk and Proposed Response Effectively. It has been suggested that the provision of clear, credible, and timely information during and after an attack, particularly a bioterrorism attack, is a critical aspect of response (Glass and Schoch-Spana, 2002). The public will require reassurance and optimism in addition to instructions for personal protection and information regarding response measures from designated spokespersons including infectious disease emergency physicians, medical toxicologists, and other medical personnel depending on the type and extent of the event. The importance of immediately available, consistently open, and honest communication cannot be overstated. The public must have trust in its officials to help limit unnecessary anxiety and decrease fear. The public must be aware that an organizational system and a communication system are in place and functioning. Trusted and designated spokespersons (for example, the health commissioner) must provide clear, concise, and consistent messages. The media and the public should have easy access to information (for example, through regular press conferences, widely available phone numbers for call-in questions, Web sites). Media and calls, issues, and questions from the public should be monitored so that answers and clarifications can be disseminated. Messages may require modification if perceived needs remain unrealized.

Surveillance of the event must be accurate and current, so that the spokesperson is perceived as "an expert" and continues to be trusted by the media and the public. The spokesperson must be able to "shift gears" as more information is learned. Information should be shared with appropriate partners so they can help in dissemination efforts. At all levels,

there should be an understanding of political concerns, realities, and needs in order to comprehensively understand the issues. If political or contentious issues exist, a forum for discussion may be helpful such as town hall meetings or moderated call-in radio programs.

Public health officials should enlist the help of "stakeholders." For example, using mental health professional organizations to help disseminate messages may be beneficial. Finally, those charged with serving as spokespersons must help the public put risk in perspective (in other words, the risk versus the benefits of certain actions). This will allow the individual to decide how concerned to be about the risk and what precautions to take. Similarly, honest and ongoing communication during and after an event regarding possible sustained risk and efforts for recovery may enable people to feel less helpless.

POST-EVENT PHASE

During the post-event (or recovery) phase, the components of the infrastructure are focused on minimizing the impact of the event and ongoing social and economic disruption, and restoring basic functions and normalcy. While many previous functions will continue in this phase, those highlighted at this period include provision of resources such as medical services (function 1), continuation of interventions that promote individual and community resilience (function 2), screening of psychological symptoms (function 4), treatment for acute and long-term effects of trauma (function 5), locating individuals and groups of special interest (function 10), and response for general human service needs that contribute to psychological functioning (function 6).

Individuals and Populations Affected

Biological–Physical

Minimize Secondary Consequences. Decontamination can be frightening to both those being subjected to or involved in the procedure and those observing it. Taking care to explain the procedure to those involved and removing the activities from public view may help reduce anxiety and fear.

Triage and Treat as Necessary. The provision of basic communication and medical services continues in this phase. Efficient triage and treatment of injury will reduce physical damage and lessen the psychological impact. Isolation of contaminated individuals and evacuation of people

from their homes may be difficult to enforce. Effective communication of the need for isolation and evacuation may facilitate these actions.

Recover, Identify, and Bury the Dead. Body recovery, identification, and burial are psychologically important to the bereaved family and friends of the victims. Efficient completion of these activities as soon as possible after the event may allow people to advance the process of grieving and begin to achieve closure.

Psychological

Continue Psychological First Aid. In the immediate aftermath of a terrorism event, PFA should be focused on reducing physiological arousal, mobilizing support, and reuniting families. Family reunification may be facilitated by the implementation and announcement of registration and tracking systems for evacuated individuals. Effective risk communication is also part of this effort and is described further below.

A CBRN terrorism event will present unique challenges. After such an event, people will be more likely to seek the help and advice of primary care rather than mental health care providers. Health care providers will play an important role in responding to the physical and psychological needs of people who are exposed and unexposed. Individuals may be concerned about immediate and long-term effects (for example, cancer). Quarantine and isolation may limit family reunification. The inability of people to be with loved ones who may be ill or dying will create significant psychological distress. People may choose not to bring sick family members to the hospital for fear of separation, which may lead to spread of contamination or contagion. Grief and its resolution may be impeded if traditional funeral and burial rites cannot be performed because of inadequate decontamination of the body. Physicians and officials may be presented with an ethical challenge when family members desire to remain with exposed individuals, placing themselves and potentially others at substantial risk.

Conduct Individual, Group, and Population Assessments to Identify Specific Needs in Response to Event. There are two approaches to the management of psychological consequences of terrorism in populations. These conceptual approaches are important and complementary means to address the issues; they involve consideration of (1) assessment, triage, and interventions on an individual level; and (2) the populations affected and the expected consequences that will have to be addressed. As discussed, one of the most significant gaps in responding to psychological

consequences of terrorism is the lack of knowledge and evidence base to inform practice and policies.

Individual Assessment, Triage, and Treatment. This model of approaching the problems of individuals after disasters is illustrated in Figure 4-1. Each individual must initially be screened to identify those at high risk for psychiatric disorders, such as PTSD or other anxiety disorder, depressive disorder, or substance-related disorders. The next step is to refer those with a high likelihood of psychiatric illness for more comprehensive evaluation by mental health professionals and refer those screening negative to community-based management. This determination of the presence or absence of psychiatric illness is a pivotal decision point for directing the individual to the most appropriate intervention system.

Research on people directly exposed to the Oklahoma City bombing (North et al., 1999) indicated that symptoms of avoidance or numbing (e.g., avoiding thoughts, feelings, and reminders of the event; feeling detached) (group C; see Chapter 2 for criteria of PTSD) were very strong indicators of PTSD. Thus, group C symptoms might help identify people at highest risk for mental illness, especially PTSD. This group should be referred for more comprehensive evaluation and management by mental health professionals. It is important to note that even those with no previous psychiatric illness are at risk of PTSD after terrorism events (North, 1999). Perhaps as many as 40 percent of those diagnosed will have no previous history. Therefore symptoms must be recognized and responded to in these atypical patients, who may require adapted treatments. Also specific psychological treatments for injured and burned individuals are not yet developed but are much needed.

As discussed in Chapter 2, disasters affect almost everyone exposed to them in some way. Depending on the severity of the event, most people will likely experience mild to moderate distress responses or behavior changes. A national survey after the September 11, 2001, attacks found that 90 percent of adults reported one or more symptoms of stress (e.g., feeling upset, difficulty concentrating, feeling irritable, trouble sleeping) (Schuster et al., 2001). Many such responses and behavioral changes can be considered ordinary reactions to extraordinary events. Most people are resilient and will recover without developing psychiatric illness. However, the distress of people without a diagnosable psychiatric disorder should not be minimized. The distress can be managed with community-based interventions including the application of psychological first aid and utilization of basic support and reassurance, stress management and problem solving skills, and linkage to community resources.

Previous research clarifying the timing of onset and duration of psychiatric disorders and distress after disasters and terrorism suggests the appropriate time frame for responding to mental health needs of indi-

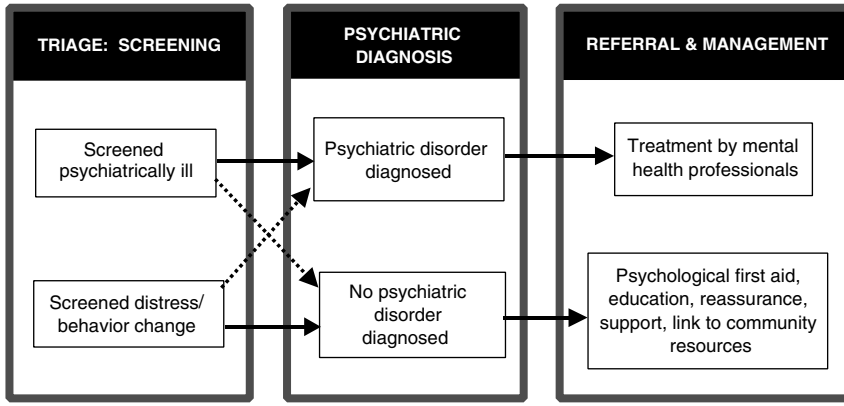

FIGURE 4-1 Model of postdisaster triage, referral, and management based on psychiatric screening and diagnosis.

viduals after disasters and terrorism incidents. After the Oklahoma City bombing, most PTSD emerged quite rapidly. Of those with PTSD who were directly exposed to the bombing, 76 percent developed symptoms the same day, 94 percent developed them within the first week, 98 percent within the first month, and none after six months. All cases proved to be chronic, lasting more than three months. These results suggest that assessment and treatment can be initiated quickly and that treatment needs will be longterm.

Population-Based Assessment. Within the population, there will be varying degrees of exposure, with a relatively small subset being directly exposed, a larger subset being indirectly exposed, and a still larger subset being exposed at a distance (for example, through the media only). Characteristics of the affected population and subpopulations are also considered (for example, seriously and persistently mentally ill treatment population, first responders, media personnel, mental health professionals) as well as characteristics of the disaster agent (for example, conventional weapons versus biological agent, small with few fatalities and injuries versus large, brief versus ongoing). It might be expected that people in the directly exposed group will be more likely to develop psychiatric illness, independent of a preexisting psychiatric illness because the intensity of the event supersedes the effects of these preexisting characteristics. For those in less exposed groups, PTSD is more likely to result from a preexisting psychiatric illness. Although individual triage and intervention should not be based on the population to which an individual belongs or the type of disaster that occurred, these characteristics can help predict

the expected population responses and guide the development of necessary systems. Knowing the rate of PTSD in various subpopulations—for example, directly, indirectly, and distantly exposed populations of firefighters (who in Oklahoma City had far more alcohol abuse than PTSD)—can help determine how much psychiatric intervention and how much other treatment will be needed. This information may help decide the number of psychiatrists, psychologists, social workers, and so forth, to place in clinics where individuals will be triaged versus the need for other services such as substance abuse programs and substance abuse screening, public education, et cetera.

Consider Intervention Needs for Groups of Special Interest. During the pre-event phase, groups of special interest and their particular needs are identified. In the post-event phase treatment considerations are made.

First Responders. Numerous studies indicate the potential risk of psychiatric distress and illness in first responders. Although further study is needed, there is some evidence to suggest that rescue workers may not be at greater risk for developing PTSD and major depression after a terrorism event than those directly affected (North et al., 2002a; 2002b). Understanding the base rates of illness in these groups is important in planning appropriate interventions for postterrorism event exposure. A study of firefighters in Oklahoma City indicated that the lifetime prevalence of alcohol use disorders was nearly 50 percent in those surveyed (North et al., 2002b). After the 1995 bombing, diagnoses of alcohol use disorders were made in almost 25 percent of the group and most of these individuals had a preexisting disorder. These findings suggest that rescue workers with a history of substance-related disorders may be at increased risk of relapse in the aftermath of a terrorism event and should be targeted for immediate assessment and intervention. The prevalence of alcohol use disorders in the population underscores the need for addressing these issues before a disaster occurs.

Providers of Health and Mental Health Services. During this phase of the event, mental health workers' knowledge of federal, state, and local government agency operations; the Stafford Disaster Relief and Emergency Assistance Act of 1988; and networks of Voluntary Organizations Active in Disaster (VOAD) is particularly important (Jacobs and Kulkarni, 1999). This knowledge will help disaster workers negotiate complex systems and provide more effective and coordinated care.

Disaster and trauma work will inevitably affect those health and mental health care professionals who provide care to individuals experiencing the psychological consequences of terrorism. The work can affect a provider's view of him or herself, family relationships, and friendships. While clinicians should always be aware of when they need to remove

themselves from direct provision of services or supervisory activities in order to obtain self-care, this may be particularly important after terrorism events.

Minority, Immigrant, and Refugee Populations. As discussed above, minority, immigrant, and refugee populations may be at higher risk for negative psychological consequences based on prior experiences of traumatic events and language or cultural needs that are different from the majority of the population toward which intervention strategies are targeted.

Rural populations. Residents of the rural and frontier areas of the United States will, of course, vary in their psychological responses to terrorist acts based upon the specifics of the incident, exposure, and individual differences. In the event of agricultural terrorism, rural populations may be particularly in need of assistance. Some general issues pertaining to rural and frontier responses are noted here (personal communication, Randal P. Quevillon, Department of Psychology, University of South Dakota, April 29, 2003). Many rural areas have been under chronic economic pressures and the ongoing stress of these circumstances has taken a toll on the resilience of many rural dwellers. The quality of sharing and working together that is often a strength for rural dwellers responding to life's exigencies may not necessarily extend to mental health concerns and psychological reactions. In part because of the high stigma associated with psychological problems and symptoms, rural dwellers did not, during the farm crisis of the 1980s, tend to seek formal assistance nor did they share concerns with neighbors and exchange social support in mental health areas. This relative isolation when dealing with psychological concerns may take place in the future in psychological responses to terrorism. Despite the higher interconnectedness of rural social networks as compared to urban counterparts, psychological reactions and stress symptoms that would follow a terrorist attack might be faced in isolation or on family units.

In addition, rural dwellers may be skeptical of federal programs and communications. This may lead to relatively high distrust levels in response to official communications about terrorist attacks and particularly descriptions of weapons of mass destruction events and recommended responses. Individuals in rural areas tend to do more of their routine business with people they know and are used to a "relationship basis" for transactions. Communications and assistance efforts in rural areas will be more effective if they make use of the networks and systems already in place and if they utilize indigenous persons wherever possible. Because most rural area are seriously underserved by both medical and mental health professionals, external resources must be brought in to bolster local efforts to respond to terrorist acts. However, since local professionals know their communities and have built trust and credibility as well as a

track record of working together with other agencies/professionals, they need to have a central place in planning and execution of response efforts and in providing context to others coming to the area to provide assistance.

Children in Schools. There is national support for the belief that schools are a natural place to support children (IOM, 1997; Weist, 1997). The RAND surveys conducted after September 11, 2001 (Stein, 2002) indicated that schools play an important role after terrorism, providing education programs on history of conflicts and comparative religions, counseling for children, and mental health and safety information to parents.

Delivering mental health services through the school system to address psychological needs and consequences requires multidisciplinary coordination of training and action plans to place sufficient skills and resources in the schools where they are needed. Work to ameliorate the negative effects of terrorism on children actually begins by ensuring that teachers, parents, principals, and other school adult caretakers address their own traumatic experiences. Disrupted home and school environments; personal, financial, and property losses; changes in spousal, family, and work relationships; illness; and debilitating injury are adult factors that mitigate against the social and emotional support available to vulnerable children.

Evidence-based treatments for terror-related psychiatric disorders have yet to be determined. However, the literature indicates that cognitive behavioral therapy (CBT) is recommended for the treatment of youth PTSD (Cohen, 1998) and depression (Brent et al., 1997; Kaslow and Thompson, 1998; Lewinsohn et al., 1990). Such therapies have been shown to be effective for children with a history of sexual abuse (Deblinger and Heflin, 1996; King et al., 2000) and single-incident trauma (March et al., 1998). In addition to child-focused trauma treatment, education for parents about their child's PTSD symptoms has also been recommended (Rigamer, 1986) and incorporated into a school-based mental health intervention project for traumatized Latino students exposed to life-threatening violence (Kataoka et al., 2003). In the immediate aftermath of trauma, psychological first aid has been widely utilized to calm the emotional distress of children, decrease the sense of emotional isolation, and focus on building coping responses. School-based interventions with adolescents in Bosnia-Herzogovina utilized a public health model that provided general psychosocial support to the general population of students, offered specialized support to students at high risk of distress and disturbance, and established a professional network for consultation and referral (Saltzman et al., 2003).

Employees in the Workplace. The informal components of a workplace response vary greatly among organizations and individuals, but there are

some key elements that can take place in any size workplace and are essential to promoting recovery from a trauma. The initial response on the part of an employer to a terrorist attack should be to assess the threat and attempt to eliminate any immediate danger. Psychological interventions can begin at this stage through the use of accurate and honest risk communication about level of risk and ways to avoid it. The absence of this practice by leaders of the organization may erode trust, which may be difficult to rebuild. Similarly, leaders and managers take on an important role in psychological recovery after a terrorist attack. They often are looked to by employees as examples of appropriate responses to model, and they can help create a sense of normalcy throughout the organization. Leaders and managers should understand that some people will need additional help in order to cope and should acknowledge differences in responses (Bushnell, 2002). Furthermore, they should be able to recognize that work-related symptoms such as absenteeism and decreases in productivity may indicate problems with coping. Leaders and managers should know how and to whom to refer their employees.

Employee assistance programs, unions, medical departments, human resource departments, and health insurance companies should all be involved in an integrated response. Outreach to medium and small businesses is critical, especially with services in the post-event environment. Groups such as the Employee Assistance Professionals Association, Rotary, and Business Councils should be involved as partners in efforts to address psychological consequences.

The unique elements of some workplace settings are important considerations when designing workplace systems for response. Some employees will be concerned that seeking treatment will affect the perceptions or opinions of supervisors. This issue is especially salient when treatment with medication is involved. This type of intervention may indicate that an employee is not fit for duty, which may limit the potential for law enforcement officers, members of the military, and airline pilots to even initially address their personal concerns (National Partnership for Workplace Mental Health, 2002). Some workplace environments have a culture that is not conducive to seeking help for psychological issues. Seeking help or publicly sharing fears may be seen as a weakness. Alternative strategies may be necessary in such cases. An easily accessible anonymous service outside the workplace may be preferable to ensure confidentiality, and initiatives such as group debriefings may be less useful.

Sociocultural

Communicate That Preparedness Helped Decrease Impact of the Attack. In the post-event phase, officials should communicate how pre-

paredness helped to decrease the psychological impact of the attack and continue to publicize available services to the public in general and provide targeted messages to specialized segments of the population who may be at greater risk for adverse consequences. Steps should be undertaken to review actions taken before and during the event to assess how efficacious they were and what changes are indicated. Similar steps should be undertaken to review interactions between spokespersons and the media and public. Surveys may be conducted to assess the public's understanding and perceptions of the events and of risk communication strategies.

Publicize Availability of Services Targeted to Appropriate Segments of the Population. In addition to the implementation of PFA, additional or targeted services may have to be provided to special populations, as discussed above. The availability of these services should be widely publicized to the appropriate populations.

Produce Public Information and Warnings. The broadcast of public information and warnings will help ensure that the public has the information needed to protect itself in the event of further threats. Potential psychological consequences can be relayed via media messages with instructions regarding normative reactions and when people should seek help, from whom, and contact information.

Promote Family and Community Cohesion and Support. In addition to the prevention and mitigation of psychological consequences, mental health promotion is a concept not to be overlooked. Mental health promotion has been defined as the enhancement of the capacity of individuals, families, groups, or communities to strengthen or support positive emotional, cognitive, and related experiences (Hodgson et al., 1996). As discussed in Chapter 2, disaster events can produce positive consequences and closer ties with others. Some research has indicated that 35 to 95 percent of survivors of disasters report gaining something positive from their experience (McMillen, 1999; McMillen et al., 1997). Resilience, or positive outcome in the face of adversity, should be actively promoted after a terrorist attack to facilitate healing. Based on empirical data from literature on psychosocial resources following natural and human-caused disasters, several conclusions regarding implications for interventions have been reached (Norris et al., 2002a). Nuclear and extended families, as the basic units comprising communities, can serve as prime targets for response efforts and promoting resilience. Parents and other adults can support one another and serve as models for positive adaptation and coping for children. Communities should provide forums for collective grieving to express unity and collective action, social activities for new communities

that form because of displacement, group meetings to foster discussion of ways to rebuild communities, and outreach to those who may feel isolated in order to foster inclusiveness. Keeping in mind cultural, ethnic, and worldview sensitivity, families should be encouraged to talk about experiences, resume normal activities as much as possible, and negotiate conflict effectively to minimize negative interactions that are caused by the stress and strain of a traumatic event. Because the majority of people will not require individual treatment from mental health professionals, the goal of these strategies is to help bolster communities and give members the resources to help one another. As noted in the discussion of gaps in Chapter 3, evidence-based models for community recovery and resilience building are lacking.

Leaders in the faith-based community have a critical role in promoting healing after an event. A national survey conducted after the attacks on September 11, 2001, indicated that nearly 60 percent of respondents reported they were likely or very likely to seek support from a spiritual care provider, 43 percent reported they were likely or very likely to go to their physician, and 40 percent indicated they were likely or very likely to seek help from a mental health provider (Roberts, 2002 as cited by Murray, 2002). Turning to spirituality can help people find comfort and understanding in the aftermath of traumatic events. Leaders in this community will minister to congregations, towns, and cities as they advance through the grieving process.

Level of the Physical and Social Environment

Biological–Physical

Evaluate Effectiveness of Emergency Plan and Disaster Response. An evaluation of the effectiveness of emergency plans should be carried out as an integral part of post-event response. This may help to improve emergency planning for possible future events. Findings from such evaluations should be shared with the community since openness throughout this process will assure people that diligent efforts were made to respond. It may also help to minimize the distrust that may arise when there is a perception that authorities are trying to cover up an inadequate response.

Mitigate Ongoing Health Risk and Secure Physical Environment. Living in an environment where there is ongoing contamination of the air, water, or food supply, or where people do not feel safe, may constitute a stressful experience for many people. Mitigating ongoing health risks reassures the population that the authorities are working to reduce the danger and will contribute to the restoration of a more normal and safe envi-

ronment. This might be accomplished, for example, by cleaning up hazardous sites or by encouraging people to take appropriate precautions to avoid harmful health effects (e.g., keeping windows closed to minimize the amount of dust and debris present in indoor air). Attention to securing physical safety and infrastructures (inspection of food and water supplies; restoring sanitation and communication facilities and transportation services) will improve the public safety and facilitate return to usual life. Attention to safety, including fire control, and security of disaster sites will further reduce physical and psychological casualties.

Monitor Ongoing Threats. Ongoing threats should be monitored, providing further reassurance to the population. Advancements in monitoring that are based on current event evaluation should be emphasized.

Psychological

Limit Secondary Exposure. Although the evidence linking media exposure to traumatic events and psychological consequences is correlational, the public may benefit from very limited viewing of repeated depictions of the violence associated with terrorism events.

Adjust Risk Communication, Emphasizing the Positive. Risk communication during the post-event phase should focus on communicating to the public that response and management measures helped to minimize the impact of the attack. This information should be used in future pre-event planning and communication.

Sociocultural

Establish Strategies for Community Healing. The planning of memorials, services, and anniversaries may help communities express their grief, unite, and heal. Devising a public mental health strategy may also assist communities, groups (workplace and schools), as well as families and individuals to cope with trauma reminders. In addition, informal supports may offer significant help in promoting healing. Resources provided by family, friends, support-group, and other network ties may serve as a powerful asset in promoting effective coping.

DESIRED END RESULTS

The purpose of an integrated approach to responding to and preparing for terrorism events is the prevention and mitigation of adverse psychological consequences. These consequences include the three domains

discussed throughout this report: distress responses, negative behavioral changes, and psychiatric illness. The goal of comprehensive preparedness and response is to limit decreased productivity and performance of workers and to reduce physical injury, both of which are linked to psychological injury. In addition, preparation for terrorism events and effective population responses to these events may be used as an opportunity for growth and empowerment—characteristics that individuals will hopefully carry with them beyond the acute phase of the event. Finally, the broader societal goal, beyond the objectives for individual citizens, is to minimize disruption to the daily routines of life and promote community cohesion, the very things that terrorists seek to destroy.

APPLICATION OF THE EXAMPLE PUBLIC HEALTH STRATEGY

As discussed at the beginning of this chapter, psychological consequences and the specific prevention and response strategies will be dependent on a host of factors including the type of threat or event (conventional explosives, CBRN), nature of the event (for example, single-site versus multisite, continuous or repeated versus single event), degree of exposure, and particular population or subpopulations involved. Various features of an event or threat will carry different risks for psychological consequences and these risks will vary for susceptible populations. In addition, hoaxes and false alarms may carry alternate dimensions of risk.

The example public health strategy is offered to organize and categorize known and hypothesized interventions. It is proposed to serve as a basic plan from which more detailed and tailored plans may be derived to fit the variety and complexity of terrorism events that may arise. Methods to achieve these elements and strategies for coordinating systems will need to be tested and evaluated. It is hoped that the committee's plan will stimulate further development and investigation of elements that will provide the necessary framework for effective planning and response in order to protect the public's health during the nation's ongoing war on terrorism.

Finding 4. Management of the psychological consequences of terrorism (and similar community events) is a pressing public health issue. Psychological interventions are needed for the pre-event, event, and post-event phases of terrorist attacks. Such interventions are necessary to address potentially affected individuals and populations, the injurious agents, and the physical and social environment, as identified in the committee's example public health strategy. The nation's present mental health system is an essential, but inadequate, resource to meet all the expected needs.

5

Conclusions and Recommendations for Effective Prevention and Response

The discussions in the preceding chapters have emphasized the need for a public health approach to prevention and intervention for psychological reactions and symptoms that are related to terrorism. Terrorism events and the ongoing threats of terrorism will affect the general population. Illustrative was the February 7, 2003, elevation of the threat condition designation from the "elevated risk" to the "high-risk" category—a decision based on specific intelligence that suggested places frequented by most Americans, such as hotels, apartment buildings, and malls, might be targets. The media continued to speculate about the possibility of a biological or chemical attack. News of the elevated threat condition sent large numbers of people in some communities to stores to purchase duct tape, water, and plastic sheeting, leaving store shelves empty. The country's ongoing "war on terrorism" will force Americans to live with a new sense of uncertainty. Psychological consequences, although variable in degree throughout the population, will result.

Based on its findings, the committee makes the following recommendations under a guiding principle of universal preparedness. Effective preparedness and response strategies will help to limit the psychological consequences of a range of terrorism events. Universal preparedness is the conceptual basis used to ensure that all hazards, all populations, and all phases are addressed. In considering preparedness for all populations, the committee underscores the importance of addressing issues for the nation's racial and ethnic minority groups whose needs are often not adequately met. It is also hoped that in such preparedness, lessons can be learned and potentially applied to the variety of other violent events that

cause fear, anxiety, and stress in the communities in which Americans work and live. The committee's public health strategy, as outlined in Table 4-2, is a strategic vision for assessing the completeness and effectiveness of plans to address the variety of violent events that affect the population and to define and address gaps in preparedness and response.

FINDINGS AND RECOMMENDATIONS

Based on its findings and conclusions, the committee offers several recommendations, under the principle of universal preparedness for all hazards, all segments of the population, and all phases of the event. The committee has developed recommendations that are grouped into five categories: (1) preventive measures, (2) education and training for providers, (3) workplace preparedness, (4) research needs, and (5) ensuring preparedness though a comprehensive public health strategy. The sequence in which the recommendations are presented does not reflect a priority order.

Finding 1: Terrorism involves the illegal use or threatened use of force or violence, and an intent to coerce societies or governments by inducing fear in their populations. Other acts of community violence can also be devastating to psychological health. Pervasive violence, such as repetitive urban assaults, school shootings, and workplace violence, are events that affect small and large, urban and rural communities. These events have elements that may be similar to terrorism in terms of psychological impact, and lessons learned from responses to terrorism may help to inform responses to these other events. Similarly, lessons learned from pervasive community violence may provide some benefits for examining responses to terrorism events.

Preventive Measures

Finding 2: Terrorism and the threat of terrorism will have psychological consequences for a major portion of the population, not merely a small minority. Research studies that have examined a range of terrorism events indicate that psychological reactions and psychiatric symptoms clearly develop in many individuals. To optimize the overall health and well-being of the population, and to improve the overall response to terrorism events, it is necessary that these potential consequences be addressed preventively as well as throughout the phases of an event.

Recommendation 2-1: The Department of Health and Human Services (HHS) including the National Institutes of Health (NIH), the

Substance Abuse and Mental Health Services Administration (SAMHSA), and the Centers for Disease Control and Prevention (CDC), should develop evidence-based techniques, training, and education in psychological first aid to address all hazards and all members of society during the pre-event, event, and immediate post-event phases of a terrorism event in order to limit the psychological consequences of terrorism. (Chapter 2, pages 61-62; Chapter 3, page 96)

Techniques should be scientifically developed, implemented, and evaluated for their efficacy and effectiveness in decreasing distress, promoting healthy behaviors and positive coping, and limiting psychiatric illness. This training and education may help to reduce the negative impact of terrorism and other traumatic events while strengthening the natural support structures of communities. In these efforts, HHS should partner with the Red Cross and the Department of Defense, and public and private mental health care providers among others.

Recommendation 2-2: HHS, including NIH, SAMHSA, and CDC, should develop public health surveillance for pre-event, event, and post-event factors relevant to addressing the psychological consequences of terrorism and should develop methods for applying the findings of this surveillance through appropriate interventions for groups of special interest. (Chapter 2, pages 61-62)

This public health surveillance will include the determination of background rates of behavioral and psychological factors important in predicting psychological consequences, and the need for mental health services and prevalence of event and post-event consequences and risk factors for negative psychological consequences. Agencies should develop a common protocol and work cooperatively to develop, implement, and sustain comprehensive public health surveillance across phases. Epidemiologic surveillance data obtained under this recommendation should also be utilized to establish baseline community goals such as those incorporated in Healthy People 2010 (HHS, 2000).

Education and Training for Providers

Finding 3-1: Many mental health professionals do not have specific knowledge with regard to disaster mental health. Training and education emphasizing psychological consequences and methods of response should be provided to professionals within the mental health fields, including school-based mental health practitioners such as school counselors, school psychologists, and school social workers.

Recommendation 3-1: Academic healthcare centers, professional associations and societies for mental health professionals, and state boards of education, in collaboration with HHS, including SAMHSA, NIH, and CDC, should ensure the education and training of mental health care providers, including community- and school-based mental health care providers on responding to the psychological consequences of terrorism. (Chapter 3, pages 93-94)

An evidence-based models and implementation strategies should be developed. Any protocols that are developed should be evaluated. The goal of training should include instruction at various levels that will correspond to population needs and the risks associated with different types of events (for example, conventional explosives vs. biological). Training should address psychological consequences of terrorism and disaster response, including the provision of supervision. Disaster mental health curricula within graduate training programs should also be addressed to ensure that students are adequately trained.

Finding 3-2: A broad spectrum of professional responders is necessary to meet psychological needs effectively. Those outside the mental health professions, who may regularly interface with the public, can contribute substantially to community healing. These professionals include, but are not limited to, primary care providers, teachers and other school officials, workplace officials, government officials, public safety workers, and faith-based and other community leaders. However, these professionals will require knowledge and training in order to provide effective support. Basic knowledge of psychological reactions, as well as training in support techniques and recognizing serious symptoms that necessitate referral, should be provided.

Recommendation 3-2: Academic centers and professional associations and organizations, in collaboration with HHS, including SAMHSA, NIH, and CDC, should ensure the education and training of relevant professionals in health fields, including primary care providers, school-based health care providers, public health officials, and the public safety sector, in the psychological consequences of terrorism. (Chapter 3, page 82; Chapter 4, pages 114-115).

Training should include identifying psychological consequences of terrorism and evidence-based psychological interventions, and risk communication.

Recommendation 3-3: SAMHSA, in collaboration with academic centers and state and local health care agencies, should ensure the provision of education and training in the psychological conse-

quences of terrorism for a range of relevant community leaders and ancillary providers. (Chapter 4, page 115)

Training should include identifying psychological consequences of terrorism and evidenced-based psychological interventions. In addition to training, creative opportunities exist for public, private, and academic linkages. Innovative methods should be developed for a wide variety of departments and organizations (for example, communications, public health, public administration, law, business, schools of education) to contribute their expertise in service of preparing for and responding to the psychological consequences of terrorism.

Workplace Preparedness

Finding 3-3: The workplace is a newly recognized and important environment in which to address public health planning for the psychological consequences of terrorism. Some examples of new occupationally exposed groups include construction workers, postal workers, utility workers, public health workers, and children and teachers in schools. Implementation of universal preparedness is required for the workplace, but specific considerations will be needed for critical occupational sites. Recent terrorism events have created new workplaces and categories of responders and have exposed traditional first responders to new levels of job-related stress and risk exposure.

Recommendation 3-4: The National Institute of Occupational Safety and Health (NIOSH) and the Department of Labor should collaborate to ensure the existence of appropriate guidelines to protect workers by incorporating the psychological aspects of preparedness into all planning and interventions. Because schools are a workplace for staff and students, the Department of Education should collaborate with state and local education systems to ensure preparedness. (Chapter 3, page 81).

Implementation of this recommendation will require collaboration with critical public and private business organizations to ensure training, dissemination, and implementation.

- The Department of labor and NIOSH should examine current plans for traditional first responders and ensure that guidelines are developed for other responders.
- Agricultural terrorism has the ability to affect many workplaces, including American farms and the food production and distribution system at the federal, state, and local levels. The committee recommends that HHS, the Food and Drug Administration (FDA), and the U.S. Department

of Agriculture (USDA), in collaboration with state and local departments of health, ensure that psychological consequences are considered in preparedness and response plans.

- Because schools are a workplace for both staff and students, the committee recommends that the Department of Education in collaboration with state and local education systems ensure that universal preparedness is required in schools to address planning for psychological consequences of terrorism for students and teachers.

Research Needs

Finding 3-4: Research following terrorism events presents a multitude of practical and ethical challenges. Utilizing findings from research on other traumatized populations is not an adequate substitute, and support of disaster-specific and terrorism-specific research is necessary to provide information pertinent to the population and its needs for intervention. This research can be facilitated by improving cooperation and coordination among federal funding and regulatory agencies as well as by developing the high-quality methodology necessary for the conduct of these investigations.

Recommendation 3-5: Federal agencies such as CDC, NIH, SAMHSA, and NIOSH should coordinate research agendas, cooperate in establishing funding mechanisms, and award timely and sufficient funding of research on best practices to inform and guide interventions that will address the psychological consequences of terrorism. (Chapter 2, pages 61-62; Chapter 3, page 96).

- These federal research agencies should develop an integrated and coordinated research agenda directly addressing psychological consequences of terrorism across the pre-event, event, and post-event phases to ensure the development of individual, population, community, and clinically based interventions. All areas of importance should be studied and duplication of research avoided. Topics of study may include, but are not limited to, the characteristics of terrorism that may differentiate its impact from other disasters; impact of terrorism on functional indicators such as marital and family relationships and school performance, understanding varied effect of terrorism events, and the impact of media accounts of terrorism events on psychological consequences.
- Whenever federal funding agencies such as the Health Resources and Services Administration (HRSA), CDC, NIH, and SAMHSA provide grants for the implementation of new interventions, a portion of that funding should be mandated for evaluating those interventions.
- Research on the psychological consequences of terrorism should

not only assess psychiatric disease in the affected population but also address restoring family, social, school, occupational, community, and individual functioning and building individual and community resilience.

- Institutional review boards should be encouraged to review research proposals on the psychological consequences of terrorism, cognizant of the short turnaround time required for obtaining early postdisaster data and the unique difficulties and challenges of disaster research. HHS should initiate a review of institutional review board procedures in order to establish rapid review procedures for proposals addressing the psychological consequences of terrorism.
- Research funding organizations should develop more timely mechanisms for consideration and review of research proposals as well as mechanisms for funding needed large awards in a short time.
- Research should be developed to evaluate the sources and mechanisms of lack of coordination among agencies at all levels. Strategies for effective coordination and communications should be identified and resulting effects on response capabilities during crisis evaluated.

Ensuring Preparedness Through a Comprehensive Public Health Strategy

Finding 4: Management of the psychological consequences of terrorism (and similar community events) is a pressing public health issue. Psychological interventions are needed for the pre-event, event, and post-event phases of terrorist attacks. Such interventions are necessary to address potentially affected individuals and populations, the injurious agents, and the physical and social environment, as identified in the committee's example public health strategy. The nation's present mental health system is an essential, but inadequate, resource to meet all the expected needs.

Recommendation 4-1: HHS and the Department of Homeland Security should analyze federal, state, and local preparedness for terrorism to ensure that the nation's public health infrastructure is prepared to adequately respond to the psychological consequences across a continuum of possible terrorism events, including weapons of mass destruction. The committee's example public health strategy should serve as a base from which components of the infrastructure are evaluated. (Chapter 4)

Organizing pre-event, event, and post-event interventions to protect, minimize effects, and respond to consequences will require the joint efforts of the mental health, public health, medical care, and emergency response systems in the United States. Using the example public health

strategy provided by the committee will permit the evaluation necessary to define preparedness gaps and ensure that the appropriate infrastructure is available for response.

Recommendation 4-2: Federal, state, and local disaster planners must address psychological consequences in their planning and preparedness and their response to pre-event, event, and post-event phases of terrorist attacks. Consideration should be given to needs associated with different types of events and to needs of various segments of the population. Adequate federal, state, and local prioritization and funding of resources and support should be provided to ensure psychological preparedness and response. (Chapter 3, Chapter 4)

- All health, safety, and security planning by the Department of Homeland Security should include mental health preparedness and response to mitigate and prevent negative psychological consequences.
- The groups and organizations that should be involved in planning to ensure a comprehensive response include, but are not limited to, the following: The American Red Cross, the Department of Veterans Affairs, the Department of Defense (including the National Guard and Reserve), the Department of Education, state emergency management planners, mental health practitioners, workplaces (workplace health programs), schools (including school health programs), faith-based communities, and primary care practitioners.
- Local capability should be developed to verify credentials and professionally screen and schedule volunteers who may offer services after a terrorism event. Liaisons should be made with other local agencies, such as police, to help efficiently mobilize volunteers.
- HHS, including the Surgeon General's Office, should collaborate with the National Organization of Broadcasters and national and local media in the development of a code of conduct for broadcasting and reporting on terrorism events that enhances the dissemination of official messages, improves access to essential societal information, and respects the principles of the freedom of expression.. These enhanced relationships and enhanced means of communication may help to minimize hoaxes and copycat events and the development of negative psychological consequences, as well as facilitate effective responses.

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A

Data Sources and Methods

In order to respond to the study charge, several steps were undertaken to review the psychological consequences of terrorism, identify gaps in preparedness and response, and provide options to optimize the public health response. Sources of data and information included the assembly of a committee with appropriate knowledge and expertise; input from consultants; review of the trauma, disaster, and terrorism literature; and hosting of a public workshop.

STUDY COMMITTEE

A seven-member study committee was convened to assess available data and respond to the study charge. The committee was comprised of members with expertise in disaster psychology, psychiatry, social work, public health, and emergency medicine. The committee convened for three two-day meetings on October 7–8, 2002, December 4–5, 2002, and February 24–25, 2003.

CONSULTANTS

Two consultants with expertise in mental health and public health provided voluntary service to the committee. They assisted in conceptualizing the framework for the integration of mental health and public health in responses to psychological consequences of terrorism.

LITERATURE REVIEW

The study committee was not charged with conducting an extensive review of the psychological sequelae of terrorism. Rather, the committee's focus was on providing options for response. Therefore, the literature review was limited to a brief examination of general trauma and disaster mental health studies and to recent and relevant data on psychological consequences of and responses to terrorism. The focus was on peer-reviewed studies that assessed psychological reactions and symptoms following a variety of traumatic events.

PUBLIC WORKSHOP

As part of the study charge, as outlined in Chapter 1, the study committee hosted a one-day public workshop at its October meeting in order to assess the immediate and long-term consequences of terrorism; the needs of vulnerable populations; the current federal, state, local government, and private systems in place to respond to psychological consequences of terrorism; and the capacity of the current infrastructure to meet mental health needs. The agenda from the workshop is presented on the following pages.

After opening remarks by Vice Admiral Richard Carmona, M.D., Surgeon General; sponsor representatives; Ms. Susanne Stoiber, Institute of Medicine (IOM), Dr. Richard Nakamura, National Institute of Mental Health (NIMH); and Ms. Gail Hutchings, Substance Abuse and Mental Health Services Administration (SAMHSA); the first panel presented various aspects of the psychological consequences of terrorism. Dr. Roxane Cohen Silver addressed the psychological responses to traumatic events (including mental health and substance use), the impact of trauma for both short- and long-term functioning, and the similarities and differences between the consequences of terrorism and other types of trauma. Dr. Robert DeMartino discussed implications of terrorism in the United States for the population's mental health (including substance use); the differences in psychological consequences for mass disaster events, perceived-threat events, and bioterrorism; and the implications of these differences for program coordination, evaluation, and outcomes assessment. Dr. Audrey Burnam provided a review of the mental health consequences of the attacks on September 11, 2001, including the impact on those affected directly and indirectly, implications for vulnerable populations (e.g., children, emergency responders, ethnic minority or immigrant populations), and the capacity of the infrastructure to meet mental health needs. After these presentations, two respondents, Drs. James Jaranson and Elizabeth Todd-Bazemore, engaged in a discussion of considerations for special

populations including ethnic minority, refugee, and immigrant communities.

The second workshop panel reviewed response plans in place at the federal level, the effectiveness of responses, and ways to address gaps in current systems of response. The speakers addressed issues regarding the coordination and integration of services, training of key service providers, and dissemination of information. Presenters included Mr. Paul Kesner, U.S. Department of Education; Mr. Seth Hassett, SAMHSA; Colonel Ann Norwood, Uniformed Services University of the Health Sciences; Dr. Dori Reissman, Centers for Disease Control and Prevention (CDC); Ms. Kathryn McKay Turman, Federal Bureau of Investigation (FBI); and Dr. Alfonso Batres, Department of Veterans Affairs (VA).

Speakers on the third panel, Mr. Chip Felton and Dr. Betty Pfefferbaum, addressed state- and local-level responses, the effectiveness of responses, and ways to address gaps in current systems of response including the coordination of services, training of key service providers, and dissemination of information. Respondents Dr. Ruby Brown, Reverend Deacon Michael Murray, and Dr. Judith Shindul-Rothschild discussed considerations for community- and faith-based approaches and the role of nursing in mental health responses.

The fourth panel focused on the variety of ways to address gaps in nongovernmental systems of response and how to best coordinate services with federal and state efforts, train key health and human services providers, and disseminate information. Venues for intervention and service agencies discussed included the workplace, primary care, and the American Red Cross. In addition, lessons from international responses to terrorism and issues related to risk communications were addressed. Presenters included Ms. Kathleen D'Amato-Smith, Dr. Margaret Pepe, Dr. Margaret Heldring, Dr. Thomas Bornemann, and Dr. Ivan Walks.

During the final session of the committee's workshop, committee members reviewed key points from the panels they had moderated. Dr. Monica Schoch-Spana provided an overview and summary of themes from the workshop. The session was then opened to the public for further discussion of gaps in knowledge needed to inform planning and preparedness, intervention approaches to limit adverse mental health consequences, and options to optimize the public health response.

PSYCHOLOGICAL CONSEQUENCES OF TERRORISM AND SYSTEMS FOR RESPONSE

Workshop hosted by the Committee on Responding to the Psychological Consequences of Terrorism

Date: Monday, October 7, 2002
Location: Hubert Humphrey Building, Department of Health and Human Services
200 Independence Avenue, S.W., Room 800
Washington, D.C.

8:30 a.m. **WELCOME AND INTRODUCTIONS**

Lewis R. Goldfrank, M.D.
Committee Chair

OPENING REMARKS

VADM Richard Carmona, M.D.
Surgeon General
United States Public Health Service

SPONSOR REMARKS

Susanne A. Stoiber
IOM Executive Officer

Richard Nakamura, Ph.D.
Acting Director, National Institute of Mental Health

Gail P. Hutchings, M.P.A.
Acting Director, Center for Mental Health Services
Substance Abuse and Mental Health Services Administration

9:00 a.m. **PANEL ON THE PSYCHOLOGICAL CONSEQUENCES OF TERRORISM**

Moderator

Robert J. Ursano, M.D.
Committee Member

Speakers

Roxane Cohen Silver, Ph.D.
Professor, Department of Psychology and Social Behavior
University of California, Irvine

Robert DeMartino, M.D.
Associate Director, Program in Trauma and Terrorism
Center for Mental Health Services, U.S. Public Health Service

Audrey Burnam, Ph.D.
Director, Health Division, Center for Research on Alcohol, Drugs, and Mental Health
The RAND Corporation

Respondents

James Jaranson, M.D., M.A., M.P.H.
Medical Director
Center for Victims of Torture
University of Minnesota

Elizabeth Todd-Bazemore, Ph.D.
Associate Professor
Disaster Mental Health Institute
University of South Dakota

10:00 a.m. **QUESTIONS FOR PANELISTS**

10:15 am **BREAK**

10:30 a.m. **PANEL ON INTERVENTIONS—FEDERAL LEVEL RESPONSES**

Moderator

Marleen Wong, L.C.S.W.
Committee Member

Speakers

Paul Kesner
Program Specialist
Safe and Drug Free Schools Program
U.S. Department of Education

Seth Hassett, M.S.W.
Acting Chief, Emergency Services and Disaster Relief Branch
Center for Mental Health Services
Substance Abuse and Mental Health Services Administration

Col. Ann Norwood, M.D.
Associate Professor of Psychiatry
Uniformed Services University of the Health Sciences

Dori B. Reissman, M.D., M.P.H.
Senior Medical Officer
Bioterrorism Preparedness and Response Program
National Center for Infectious Diseases
Centers for Disease Control and Prevention

Kathryn McKay Turman
Program Director
Office of Victim Assistance
Federal Bureau of Investigations

Alfonso R. Batres, Ph.D., M.S.S.W.
Chief Officer
Readjustment Counseling Services
Department of Veterans Affairs

11:30 a.m. **QUESTIONS FOR PANELISTS**

11:45 p.m. **BREAK FOR LUNCH**

1:00 p.m. **PANEL ON INTERVENTIONS—STATE- AND LOCAL-LEVEL RESPONSES**

Moderator

Nancy Wallace, C.S.W.
Committee Member

Speakers

Chip Felton, M.S.W.
Associate Commissioner and Director
Center for Performance Evaluation and Outcomes Management
New York State Office of Mental Health

Betty Pfefferbaum, M.D., J.D.
Chair and Professor
Department of Psychiatry and Behavioral Sciences
University of Oklahoma College of Medicine

Respondents

Ruby E. Brown, Ph.D.
Program Manager, Community Resilience Project
Arlington County Department of Human Services

Reverend Deacon Michael E. Murray, M.A.
Director, Interfaith Crisis Chaplaincy
Taunton, Massachusetts

Judith Shindul-Rothschild, Ph.D., R.N.
Director of Psychiatry and Mental Health
Boston College School of Nursing

2:00 p.m. **QUESTIONS FOR PANELISTS**

2:15 p.m. **PANEL ON INTERVENTIONS—OTHER RESPONSES**

Moderator

Gerard A. Jacobs, Ph.D.
Committee Member

Speakers

Kathleen D'Amato-Smith, C.S.W.
Former Clinical Coordinator, AVP
Merrill Lynch Employee Assistance Program

Margaret M. Pepe, J.D., Ph.D.
Mental Health Officer
American Red Cross Disaster Services

Margaret Heldring, Ph.D.
Executive Director
America's HealthTogether

Thomas H. Bornemann, Ed.D., M.S.W.
Director, Mental Health Program
The Carter Center

Ivan C.A. Walks, M.D.
Former Chief Health Officer and Director
Department of Health, District of Columbia

3:15 p.m. **QUESTIONS FOR PANELISTS**

3:30 p.m. **BREAK**

3:45 p.m. **DISCUSSION**

Moderator

Lewis R. Goldfrank, M.D.
Committee Chair

Reviewers

Robert J. Ursano, M.D.
Marleen Wong, L.C.S.W.
Nancy Wallace, C.S.W.
Gerard A. Jacobs, Ph.D.

Monica Schoch-Spana, Ph.D.
Center for Civilian Biodefense
Johns Hopkins University

4:45 p.m. **CLOSING REMARKS**

Lewis Goldfrank, M.D.

5:00 p.m. **ADJOURN**

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Committee and Staff Biographies

COMMITTEE BIOGRAPHIES

Lewis R. Goldfrank, M.D., Chair, is director of emergency medicine, New York University School of Medicine, Bellevue Medical Center. He is the medical director of the New York City Poison Control Center. Dr. Goldfrank served as president of the Society of Academic Emergency Medicine and chaired the American Board of Emergency Medicine's Subboard on Medical Toxicology. He is coeditor of the Agency for Toxic Substances Disease Registry's *Medical Guidelines for Managing Hazmat Incidents* and senior editor of *Goldfrank's Toxicologic Emergencies*, a standard text in medical toxicology. Dr. Goldfrank previously served as the chair of the Committee on Evaluation of the Metropolitan Medical Response System Program and as a member of the Committee on Research and Development Needs for Improving Civilian Medical Response to Chemical and Biological Terrorism Incidents. Dr. Goldfrank is a member of the Institute of Medicine (IOM).

Gerard A. Jacobs, Ph.D., is the director of the Disaster Mental Health Institute at the University of South Dakota. He is also an officer of the American Red Cross Disaster Services Human Resources (the national disaster team) and the Red Cross Aviation Incident Response Team, and served as the Red Cross national consultant for dsaster mental health from 1992 to 2000. His disaster responses have ranged from the impact of an oil fire in a remote rural community to the terrorist attack on the World Trade Center on September 11, 2001, as well as numerous aviation and natural

disasters. Dr. Jacobs was a member of the American Psychological Association's (APA's) Advisory Committee for the national Disaster Response Network and also served as a member of the APA's national task force to study the responses to the Oklahoma City bombing. In addition, Dr. Jacobs serves as a consultant to the International Federation of Red Cross and Red Crescent Societies. Dr. Jacobs is an author of the World Health Organization's (WHO's) Tool for the Rapid Assessment of Mental Health Needs of Refugees, Displaced and Other Populations Affected by Conflict and Post-Conflict Situations: A Community-Oriented Assessment.

Carol S. North, M.D., M.P.E., is a board-certified psychiatrist and professor of psychiatry at Washington University School of Medicine in St. Louis, Missouri. She serves as director of consultation-liaison psychiatry and director of emergency psychiatry at Washington University/Barnes-Jewish Hospital in St. Louis. Dr. North is a psychiatric epidemiologist who has specialized in the mental health effects of disasters and terrorism for 15 years. She and her team have accumulated a systematic database on more than 2,000 victims of a dozen major disasters in the United States and internationally, including the Oklahoma City bombing and the bombings of the U.S. embassies in East Africa. Data from these studies have provided direction and practical guidance to policymakers and mental health workers designing interventions after other disasters. In 1993, Dr. North led regional efforts in eastern Missouri to provide mental health relief after the Great Midwestern Floods. She testified to the U.S. Senate about the mental health effects of the terrorist attacks on the World Trade Center and the Pentagon and has consulted for the Food and Drug Administration on pharmaceutical indications for posttraumatic stress disorder.

Patricia Quinlisk, M.D., M.P.H., is the medical director and state epidemiologist for the Iowa Department of Public Health. Yearly, for the past 10 years, she has conducted week-long epidemiologic training courses in Europe, and she teaches regularly at the University of Iowa, Des Moines University (Medicine and Health Sciences), Iowa State University, and other educational institutes around Iowa. She has expertise in clinical microbiology (MT(ASCP)) and infectious disease epidemiology. Dr. Quinlisk serves, or has served, on several national advisory committees including the Advisory Committee of the U.S. Marine Corps Chemical/Biological Incident Response Force, the Department of Defense's Panel to Assess the Capabilities for Domestic Response to Terrorist Acts Involving Weapons of Mass Destruction (the Gilmore Commission), and as president of the Council of State and Territorial Epidemiologists (CSTE). Re-

cently, she testified before two congressional subcommittees on public health aspects of terrorism and served as a member on the IOM Committee on Microbial Threats to Health in the 21st Century.

Robert J. Ursano, M.D., is professor of psychiatry and neuroscience and chairman of the Department of Psychiatry at the Uniformed Services University of the Health Sciences, Bethesda, Maryland, where he is also director of the Center for the Study of Traumatic Stress. Dr. Ursano is widely published in areas including the psychological effects of terrorism, bioterrorism, traumatic events, and disasters and combat. He and his team have served as consultants and completed studies on numerous disasters, disaster rescue workers, motor vehicle accident victims, family violence, and Vietnam, Desert Storm, and Gulf War veterans. He was a national consultant for planning clinical care responses and research programs following the September 11th terrorist attacks. Dr. Ursano is a member of the Advisory Board of the National Partnership for Workplace Mental Health (American Psychiatric Association), the Scientific Advisory Board on Bioterrorism of Substance Abuse and Mental Health Services Administration, Center for Mental Health Services, and the Advisory Board of the Center on Terrorism of the University of Oklahoma School of Medicine.

Nancy E. Wallace, C.S.W., is the founder and president of New Health Directions, Inc., a company providing Employee Assistance Program consulting services to corporations and nonprofit organizations. Ms. Wallace is a social worker specializing in employee relations, program development, and disaster relief and traumatic stress in the workplace. Ms. Wallace is also currently working with University Settlement Society of New York under Project Liberty, a September 11th disaster recovery program sponsored by the Federal Emergency Management Agency and the Center for Mental Health Services. A frequent speaker and trainer both globally and throughout the United States, Ms. Wallace also works with the United Nations (U.N.) in various capacities. For the past 10 years, she has acted as the Main Representative to the U.N. for the World Federation for Mental Health, and helped to found the U.N. Non-Governmental Organizations Committee on Mental Health. Ms. Wallace spent a number of years working as a corporate officer in the area of employee relations and also as a community organizer in New York City. She has been involved in mental health disaster relief efforts during some of the country's worst disasters, such as Hurricane Andrew, TWA Flight 800, and the September 11th attacks on the World Trade Center. She has provided expert consultation and training on crisis management in natural disasters in both Taiwan and the Caribbean.

Marleen Wong, L.C.S.W., is director of crisis counseling and intervention services for the Los Angeles Unified School District. She is also director of school crisis and disaster recovery for the National Center for Child Traumatic Stress (NCCTS) at the University of California, Los Angeles, and Duke University. Since 1974, Ms. Wong has developed and administered crisis teams and mental health programs for the second-largest school district in the United States; after September 11, 2001, she provided comparable services for the NCCTS. Ms. Wong assisted schools as an immediate on-site consultant for the U.S. Department of Education after the Los Angeles riots and the Northridge earthquake, the Murrah Federal Building bombing in Oklahoma City, the Thurston and Columbine High School shootings, and the terrorist attacks in New York and Washington, D.C. Internationally, she has advised teacher unions, and school and government officials on school disaster recovery after earthquakes in Kobe, Japan, and the Peoples' Republic of China. She is author of the U.S. Department of Justice "COPS in Schools" curriculum on mental health interventions; coauthor of articles on the treatment of traumatized students exposed to violence; and lead editor for the Jane's Information Group *Handbook on School Safety*.

IOM STAFF BIOGRAPHIES

Andrew Pope, Ph.D., is acting director of the Board on Neuroscience and Behavioral Health and director of the Board on Health Sciences Policy at the Institute of Medicine. With expertise in physiology and biochemistry, his primary interests focus on environmental and occupational influences on human health. Dr. Pope's previous research activities focused on the neuroendocrine and reproductive effects of various environmental substances on food-producing animals. During his tenure at the National Academy of Sciences and since 1989 at the Institute of Medicine, Dr. Pope has directed numerous reports on topics that include injury control, disability prevention, biologic markers, neurotoxicology, indoor allergens, and the enhancement of environmental and occupational health content in medical and nursing school curricula. Most recently, Dr. Pope directed studies on the National Institutes of Health priority-setting processes, fluid resuscitation practices in combat casualties, and organ procurement and transplantation.

Adrienne Stith Butler, Ph.D., is a program officer in the Division of Neuroscience and Behavioral Health. She is also currently serving as program officer for the Institute of Medicine (IOM) Committee on Institutional and Policy-Level Strategies for Increasing the Diversity of the U.S. Health Care Workforce, within the Board on Health Sciences Policy. Pre-

viously, she served as program officer for the IOM report *Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care*, also conducted within the Board on Health Sciences Policy. Prior to working at the Institute of Medicine, she served as the James Marshall Public Policy Scholar, a fellowship sponsored by the Society for the Psychological Study of Social Issues and the American Psychological Association. In this position, based in Washington, D.C., she engaged in policy analysis and pursued legislative issues related to ethnic disparities in health care and health research, racial profiling, and counseling provisions in the reauthorization of the Elementary and Secondary Education Act. Dr. Butler is a clinical psychologist, receiving her doctorate in 1997 from the University of Vermont. She completed a postdoctoral fellowship in adolescent medicine and pediatric psychology at the University of Rochester Medical Center in Rochester, New York.

Allison M. Panzer is a research assistant in the Board on Neuroscience and Behavioral Health. She is also currently serving as the research assistant for the Institute of Medicine (IOM) Committee on Health Literacy. Previously, she worked on the IOM report *Reducing Suicide: A National Imperative*. Ms. Panzer received her bachelor's degree from Wesleyan University with course work in psychology, neuroscience, and sociology.