THE ROLE OF PSYCHIATRISTS IN DISASTER

Summary of a Consensus Conference Held

September 18 & 19, 1995

Uniformed Services University of the Health Sciences
Bethesda, Maryland

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This is a distillation of key points developed during a Consensus Conference on the role of psychiatrists in disaster which was held at the Uniformed Services University of the Health Sciences (USUHS) on September 18-19, 1995. The major goal of the conference was to identify unique contributions which psychiatrists could bring to disaster communities and their victims. This publication represents a consolidation of perspectives from psychiatrists, other physicians, and non-medical experts in disasters on ways in which psychiatrists can aid communities to prepare for and recover from major catastrophes.

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CONSENSUS CONFERENCE ON THE ROLE OF PSYCHIATRISTS IN DISASTER

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PREFACE

The consensus conference on the Role of Psychiatrists in Disaster was held at the Uniformed Services University of the Health Sciences (USUHS) on September 17 & 18, 1995. The conference was primarily an outgrowth of the American Psychiatric Association's Committee on Psychiatric Dimensions of Disaster's efforts to pool psychiatric expertise on disaster preparation, response, and research. It was supported by a grant from the Emergency Services and Disaster Relief Branch, Center for Mental Health Services, Substance Abuse and Mental Health Services Administration (SAMHSA). The major goal of the conference was to identify unique contributions which psychiatrists could bring to disaster communities and their victims. The delineation of any gaps in mental health aspects of disaster recovery was also a desired outcome.

Participants were selected to represent a broad spectrum of experience with trauma and disasters. Psychiatrists with extensive experience with the American Red Cross and with international disasters participated in the conference. Similarly, psychiatrists active in the investigation of human responses to trauma and disaster were invited to attend. Psychiatrists with additional education and interest in Child Psychiatry, Consultation/Liaison Psychiatry, and Academic Psychiatry also participated. Finally, non-psychiatrists with expertise in disaster response shared their experiences of roles psychiatrists had played in past events and ways in which psychiatrists could be of increased benefit in the future.

This document presents the results from the conference. It represents a consolidation of perspectives from psychiatrists, other physicians, and non-medical experts in disasters on ways in which psychiatrists can aid communities prepare for and recover from major catastrophes. It is hoped that this publication will serve as a springboard for further development of the role of psychiatrists in disaster.

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THE ROLE OF PSYCHIATRISTS IN DISASTERS
EXECUTIVE SUMMARY

Psychiatrists bring a wide range of skills and expertise useful for preparing for and responding to disasters. In the aftermath of a disaster, the medical skills of the psychiatrist are very valuable.

- Basic first aid and CPR can prove lifesaving.
- A calm, professional approach can help prevent panic.
- A psychiatrist's leadership to coordinate an organized response and assistance at triage stations promotes accurate prioritization of medical/surgical dispositions and effective allocation and matching of resources to need.
- The ability to distinguish between common reactions of hyperarousal from pathological ones can ensure appropriate management of individuals.

Medical training prepares psychiatrists for recognizing disease and developing differential diagnoses. This fund of knowledge is helpful in:

- Identifying the etiology(ies) of altered mental status, especially in the aftermath of trauma where medical illness or injury can be inappropriately diagnosed as psychiatric and vice versa.
- Responding to toxic chemical exposures, whether delivered from terrorists' weapons or through industrial accidents, knowledge of pharmacology and experience with anticholinergic agents.
- Facilitating communication across a wide range of professional boundaries: interacting with community officials, disaster response agencies, police, fire and rescue, school systems, hospital staff, and medical personnel to name but a few.

The psychiatrist's familiarity with an epidemiological approach to understanding disease in a group context is invaluable in the context of disasters. This model is a useful tool in identifying:

- High risk groups for psychological distress based on exposure to trauma (e.g., body retrieval workers).
- Vulnerable groups such as the elderly and children.
- "Vectors" of disease such as communication of fear via rumor or media.

The psychiatrist's knowledge of developmental models for human behavior matches interventions to individuals incorporating knowledge of their vulnerabilities and resilience throughout the life cycle. Similarly, knowledge of the natural history and epidemiology of disease is helpful in correctly identifying all factors contributing to an individual's physical and/or emotional distress.

In addition to general medical assessment and interventions, the psychiatrist brings a number of specialized medical skills. The psychiatrist is knowledgeable of the assessment and differential diagnosis of disorders of cognition, affect, and behavior. He/she is especially helpful in situations in which psychiatric disorders are co-morbid with medical conditions. Facility with medical, psychological and socio/cultural interventions allows the psychiatrist to choose from a broad armamentarium of treatments. Psychiatrists can:

- Prescribe medications for psychiatric disorders.
- Provide symptomatic relief as appropriate for sleep problems and hyperarousal.
- Recognize and treat substance intoxication and withdrawal syndromes.
- Screen carefully for the presence of organic brain disorders and suicidal/homicidal ideation.

Psychiatrists have a number of educational experiences which provide them with expertise in disaster consultation.

- Child training in the general residency or in fellowship provides a background in consulting to non-medical organizations and leaders such as school principals, teachers and guidance counselors.
- Consultation/liaison training provides a firm foundation in working with the medically ill and their primary treatment team, chaplains, families and others in a hospital setting. It also exposes psychiatrists to experience with acute emergencies and a broad range of organic brain disorders.

Psychiatrists are well-suited to provide consultation to disaster organizations such as the Red Cross, FEMA and emergency systems as well as community leaders. The physician's medically based connections with these institutions are very helpful in gaining entree. The medical identity also facilitates participation across international boundaries.

Psychiatrists enjoy special psychotherapeutic skills useful in disasters.

- Experience in working with injured patients and the management of associated hyperarousal.
- Ability to deal with issues of death and dying are prominent in disaster work.
- Facility in sleep management and the judicious use of medications is an important contribution.

Increasingly, disasters are an all-too-common feature of modern life. Education in the unique features of Disaster Psychiatry, as well as adaptation of traditional interventions, ensures that psychiatrists are prepared to make significant contributions to the prevention and mitigation of psychiatric morbidity resulting from disasters.

THE ROLE OF PSYCHIATRISTS IN DISASTERS

SUMMARY

HISTORY OF THE ROLE OF PSYCHIATRISTS IN DISASTER

The scientific examination of psychic trauma and its sequelae is just over a hundred years old. The study of traumatic stress contributed to the differentiation of psychiatry as a distinct specialty from neurology, the discovery of the concept of the unconscious, and stimulated the development of psychotherapy.

Beginning with the massive railway accidents in England in the middle of the 19th Century, collective stress situations have been the focus of increasing attention. Psychiatrists have been intimately involved both as researchers and as clinicians since the systematic studies in the field were first initiated during the first decade of the 20th century. Research was stimulated, in part, by efforts to understand the biomedical and psychosocial effects of explosions. This interest in explosions was part of the contemporary climate of ideas during the first decade of this century, and paved the way for a fuller understanding of the mass occurrence of "shellshock" which followed in World War I. The development of an understanding of the true nature of shellshock (psychological rather than biological) was a significant breakthrough in the development of psychiatric science.

The Swiss psychiatrist Edouard Stierlin was the pioneer in the study of disasters from a psychiatric perspective. Stierlin studied two man-made disasters (a railway accident and a mining disaster in 1906) and compared them with victims of a natural disaster (the 1907 earthquake in Meson, Italy which killed 70,000). He published two works on victims of disaster based on these studies which contained interesting findings, many of which have been replicated in modern research.

The first description of post-traumatic stress reaction in rescuers was provided by Hesnard, who studied the many-sided effects of two well known French catastrophes, ship explosions in 1907 and 1911. Unfortunately, with the exception of Eric Lindeman's study of the Coconut Grove Night Club fire in Boston during World War II and a few other studies, civilian disasters were not studied again systematically with adequate research methods until the 1970's.

Military psychiatrists, serving organizations which focus highly on groups and larger social systems, have made important contributions to civilian psychiatry through their findings in stress studies. Studies of collectively stressful situations yielded some of the most widespread treatment practices in psychiatry today, such as group therapy and the concept of the therapeutic community as well as approaches to social and community psychiatry. (In contrast, academic psychology did not incorporate the important findings from war-related studies until the 1980's.)

EPIDEMIOLOGY

Disasters are not necessarily equal opportunity events. Consider floods, for example, people who build on flood plains because the land is inexpensive represent a group with special characteristics such as a lower socioeconomic status as well as the special personal characteristics of individuals willing to live under the threat of floods. Groups of individuals exposed to cataclysmic events may share certain characteristics associated with their own sets of vulnerabilities and protective factors from effects of disaster. Examples of such special populations include combat veterans, children, and rescue workers. Therefore, it is important to consider the characteristics of the affected population when considering disaster-related activities.

The number and scope of disaster-affected persons may be larger than realized and may include not only the individuals trapped in the immediate disaster situation but, also, their family and close friends, peers and other acquaintances, rescue workers, disaster relief (e.g., Red Cross, mental health volunteers) and agency personnel (e.g., insurance adjusters), if not to some degree the entire community. In highly publicized disasters such as the Oklahoma City bombing, the affected population may also include regional, national, and international news audiences who may be greatly impacted by the intensity of live video accounts. Other populations which are touched by disasters include individuals inconvenienced by a disaster's physical effects, (e.g., blocked roads and loss of electrical power), as well as its secondary effects such as economic loss (e.g., tourist trade curtailed on tropical islands due to recent hurricanes).

Different types of disasters are thought to elicit different responses from affected populations. Technological accidents may evoke higher rates of psychiatric disorders than natural disasters; willful acts of terrorism are thought to evoke the most severe reactions. Disaster-specific contributors to severity of impact may include the associated degree of terror (i.e., threat to life or limb) and horror (i.e., grotesque scenes); suddenness of onset, duration and intensity of impact, degree of damage (e.g., number of casualties; personal injury and property damages); and grief over loss of loved ones. Disasters with several of these properties are thought to promote the highest risk for severe psychiatric impact.

Besides predisposing characteristics of populations exposed to disasters, pre-existing individual considerations affect personal response to traumatic events. In disaster studies, pre-existing psychiatric illness is predictive of psychiatric problems after the event. However, with the increasing magnitude of the disaster agent and the greater the exposure to it, personal vulnerability appears to be less predictive as more individuals without previous psychological problems are affected. Other personal predictors of risk for post-disaster psychiatric problems include loss of a loved one, litigation, female gender, advanced age, and lower socioeconomic status.

DSM-IV has added a new disaster-related diagnosis, Acute Stress Disorder (ASD). This diagnosis closely resembles Post-Traumatic Stress Disorder (PTSD) but has an earlier onset (within 4 weeks of the trauma) and a shorter duration (lasting between 2 days and 4 weeks). Because ASD is a new diagnosis, there are few investigations available on its prevalence or natural history. Future research will examine to what extent this diagnosis predicts the later onset of Post-Traumatic Stress Disorder and other psychiatric conditions.

The psychiatric disorder classically associated with disasters is Post-Traumatic Stress Disorder (PTSD). Studies of disasters have reported widely varying rates of PTSD, as low as 2% following a volcano, 4% after torrential rain and mudslides, and 4%-8% following flooding and exposure to dioxin contamination. Other researchers have reported much higher rates of PTSD: 44% after a dam break and flood, 53% following bushfires, and 54% following an airplane crash landing. Although only a minority of survivors of most disasters develop diagnosable cases of PTSD, some symptoms may be abundant or even universal.

The natural history of PTSD is that symptoms often begin within hours, and usually within a few days, of the traumatic event. Delayed onset (by definition, beyond six months) is uncommon, although cases beginning later, as many as years after the event, have been described. A study of the Buffalo Creek dam break and mudslides found that 20% of all PTSD cases identified were delayed cases. Studies of Vietnam veterans found that 16% of post-Vietnam PTSD cases had delayed onset.

PTSD symptoms typically begin to fade within weeks of the event, although this can vary considerably. Many studies report that roughly half of the cases in the general population resolve by six months. Chronic PTSD with symptoms which can persist for many years, however, has also been described, including one-third of the cases persisting for at least three years. Chronicity has been predicted by the presence of pre-existing psychiatric disorders, neuroticism, a history of early separation from parents in childhood, and family history of anxiety or antisocial behavior, as well as litigation. (The most marked chronicity in PTSD sufferers has been observed in prisoners of war, among whom 50% to 90% have been found to have active PTSD after forty years.)

Research indicates that other psychiatric disorders often accompany PTSD in disaster survivors. The most prevalent co-existing disorders appear to be major depression and anxiety disorders. Given the well documented potential for improvement with treatment, these disorders should not be overlooked in evaluation of disaster survivors for post-traumatic symptoms. A complete psychiatric past history of these disorders as well as substance abuse should be taken and considered carefully in assessment and planning of treatment for disaster survivors.

Post-traumatic Stress Disorder is not the only psychiatric disorder seen following disasters. Major depression, substance abuse, generalized anxiety disorder, and adjustment disorder have also been diagnosed in individuals exposed to a disaster. Psychological reactions to physical injury and illness are also important postdisaster responses to include in a differential diagnosis.

Not to be overlooked is the resilience of people after disasters. In spite of the overwhelming prevalence of PTSD symptoms after extreme traumas, the majority of survivors do not become psychiatrically ill. Reassuring these individuals that their symptoms represent normal responses to extreme events, and helping them re-establish their balance, can go a long way toward helping them cope with such extreme situations.

There are few data pertaining specifically to women following major disasters. The field of psychiatric response to disaster is relatively new, as is the comparison of women separately to men; hence, the marriage of the two phenomena has rarely occurred in the research literature to date. In the general population, however, it is well documented that women are more prone to depressive and anxiety disorders than are men, although men greatly outpace women in substance use disorders. Therefore, it is not unexpected that in extreme situations such as disaster, women, compared to men, might be especially prone to depressive and anxiety disorders, including PTSD (as opposed to substance abuse for men). In numerous disaster studies, women have been shown to have significantly higher rates of post-disaster psychiatric disorders than men. Women are found to be more likely than men to visit physicians and to take medication after disasters. Therefore, health professionals may represent a potentially more useful source of post-disaster intervention for women than for men.

BARRIERS THAT IMPEDE THE PSYCHIATRIST'S FUNCTION IN THE TIME OF A DISASTER

Psychiatrists increasingly are assisting citizens after catastrophic events and forging a new role in the process. A number of barriers impede the active involvement of psychiatrists in disaster response. They can be categorized as:

- Internal characteristics - an internalization of a professional identity which focuses on office-based medical care
- Interprofessional characteristics - conflict between psychiatry and other mental health care providers
- Community characteristics - the general public's perception and expectations of what psychiatrists do

In order to further psychiatric participation in disasters, these obstacles must be removed or circumvented.

Internal Characteristics

Psychiatrists interested and willing to participate in helping post-disaster victims often need to modify expectations and attitudes which are helpful in their usual clinical practices. Disaster psychiatrists must be comfortable in a professional collaboration with disaster emergency workers to join and assist in their objectives - assisting a victim in a setting of chaos, obtaining full historical data, and coping with shifting scenarios, blurring of roles and a large ratio of helpers to victims.

Interprofessional Characteristics

Disaster events are characterized by the rapid appearance, seemingly out of nowhere, of multiple agencies, volunteers and professional groups who are eager to find a niche and participate in the emergency activities. Each group follows different guidelines, objectives, regulations and schedules. Generally, these activities are difficult to coordinate. Psychiatrists are one group of the many mental health professionals that are interested in participating as part of a cadre dealing with behavioral/emotional issues.

Areas of "turf" control, ideological guidelines, and power-yielding are barriers that appear in many settings. These issues can be mitigated when clear leadership and role definition are agreed upon before a disaster occurs.

Community Characteristics

The historical reputation of psychiatrists' activities as associated only with mentally disturbed individuals impedes the role of psychiatrists assisting citizens reacting emotionally to traumatic circumstances. At times, there is a circular reinforcement when psychiatrists cannot change their methodology and thus interact with a "victim" as if he or she were a "patient."

The small number of psychiatrists available to participate in these efforts reduces the "critical mass" of professionals who can impact on the awareness of lay and governmental leaders, who, in turn, could begin to change community expectations of the profession. Through the past years, these barriers have been a challenge to psychiatrists. Now recognizing the existence of these barriers, psychiatrists are beginning to address them formally and informally.

THE PSYCHIATRIST IN PRACTICE IN THE DISASTER COMMUNITY

Problems

The local psychiatrist is usually in private practice or works for the local mental health center. This means a heavily booked schedule with minimum backup available and minimum free time (vacation, etc.). Their family usually lives in the disaster area and their own physical and fiscal resources may have been damaged or lost. Family members of the psychiatrist may have been injured or lost.

Advantages

The private practice psychiatrist has a unique advantage in knowing the local resources, terrain, politics, and culture. This psychiatrist is known to the medical community, the general populace, and local officials which provides for immediate access to the disaster site, trust-building, and access to resources. Their recommendations regarding mental health needs may be the only ones for up to 36 hours post-disaster. With proper training (which involves a minor time commitment) the local psychiatrist can be invaluable in decreasing the overall morbidity among community members, health professionals, and local rescue workers. Of equal importance, the local physician will remain in the community and will be caring for the longer term sequelae - long after external resources have disappeared.

Clinical Vignette

A single white female in her early 30^{s} presented with a history of incapacitating chronic depression (greater than 1 year) but new onset nightmares and sleep disruption for the past 3 months. Investigation revealed extensive media exposure to the Murrah Building bombing with particular interest in the child victims 3 months prior to this exam.

Further investigation revealed an untreated disaster exposure one year prior to the bombing. The woman participated in a failed rescue attempt of three children in a car carried away by flood waters. She was also present three days later when the car and bodies were retrieved.

Neither she nor any of the other flood rescue workers received any debriefing. She had not revealed any of these experiences to past therapists (psychologist, social workers) as she felt they could not relate to the medical exposure of the bomb experience just as she, herself, did not relate to the failed rescue of the drowned children. Knowledge that the psychiatrist was a medical professional allowed her to reveal her source of emotional pain and begin to deal with her PTSD.

SPECIAL POPULATIONS

To effectively use the skills and knowledge of a psychiatrist participating in emergency post-disaster programs, psychiatrists need to pay special attention to different and vulnerable populations. These populations have certain specific characteristics which demand modifications in post-disaster approach counseling. Among many of these groups we have selected the following:

- Medically ill/chronic illness/injuries
- Psychiatric illness (alcohol and drug use)
- Handicapped (blind deaf)
- Cultural minorities
- Elderly
- Isolated populations
- Children
- Bereaved
- Disaster workers

Individuals with Disabilities

Psychiatrists are in a unique position to use their medical skills to ascertain rapidly the physical/mental conditions and needs of the victims following a disaster. Generally, a short, concise history has been gathered by the emergency personnel who desire consultation or direct examination of the victim. Individuals with physical handicaps and with marginal daily coping skills will have stress reactions to the altered environment. Family members who accompany the disabled victim will need help to deal both with their own problems plus the ones presented by their disabled or chronically ill relatives.

Psychiatric Illness

Victims who have a diagnosis of mental illness or addiction syndromes present a complex diagnostic challenge to psychiatry - sorting out the manifestation of stress reactions, exacerbation of their mental illness and effects of abrupt withdrawal of alcohol/drugs, all of which produce complicated behavior profiles. The expectation is that the victim may become cognitively and emotionally impaired for an interval of time, but return to a baseline of usual behavior. Intervention focuses on increasing the victim's awareness of the emotional effects of disaster, and assisting in improving the ability to cope. When feasible, the appropriate medication should be obtained and instituted. Ideally, in regions that are disaster prone, psychiatrists should counsel their patients to have a 2-3 week supply of medication in "disaster kits."

Handicapped Populations

Individuals suffering from handicapping conditions such as blindness, deafness or impaired muscle function are vulnerable when their familiar surroundings suffer the effects of disaster. Disorientation and increased dependency needs influence the level of emotional reactions which, in turn, may affect behavior and coping capacity. The psychiatrist can assist the emergency staff to address the needs of the handicapped individual in the new surrounding of an evacuation shelter. The victim may also manifest a clinical syndrome necessitating diagnosis and treatment.

Cultural Diversity

Socio-cultural origins of victims have important influences on how victims manifest post-disaster behavior and how they accept help from "strangers." Therefore, experiences with and knowledge of specific cultures from the regional area of the disaster are helpful to the psychiatrist participating in the emergency program. Differences in cultures and language can add to miscommunication and mistaken diagnosis. There is a tendency among physicians to over-diagnose pathological post-disaster reactions in minority/culturally diverse victims. Culturally competent psychiatrists may prevent labeling these victims with idiosyncratic behaviors as more disturbed.

Geriatric Populations

This group is an especially vulnerable post-disaster population. They may lack support systems and may have a declining physical capacity including diminished functional capacities. The psychiatrists will be able to use their medical and psychological skills to assist the elderly with the multiple physiological and emotional reactions produced by trauma. Attention should focus on :

- Acute physical trauma secondary to the disaster such as fractures or subdural hematomas
- Loss of familiar personal space
- Use of multiple medications
- Chronic health conditions
- Cognitive changes due to losses of "cues" and manifesting as disorganization, confusion, and memory changes

Isolated Populations

Among the groups that may be affected by disaster are individuals who are categorized as "homeless." This group is a difficult group to assist and counsel. Due to their lack of previous shelter and social connections, they may fall between the cracks of the emergency assistance programs. The homeless may also fear or resent authority figures who could provide assistance. They tend to stay only briefly in the official shelters and are soon lost to the emergency teams.

Occasionally, the psychiatrist might help link a homeless family to social resources by assessing their psychosocial needs and using his/her influence to obtain the interest of a church or social group. Unless a community develops a categorical special program for this population, they will suffer the consequences of the community disruption and scarcity of resources after a disaster.

Children

The psychological effects of natural disaster on children and adolescents has become an emerging focus of study. In recent years, reports have been published on the psychological responses of children and adolescents to hurricane, fire, earthquake and flood. The spectrum of post-traumatic stress symptomatology in children and adolescents generally parallels the psychological responses of adults to overwhelming disaster. Acute psychological responses to natural disaster include trauma-specific fears, fears of recurrence, regressive behavior, externalizing symptoms, behavioral reenactments, post-traumatic play, avoidance of "traumatic reminders," emotional detachment, anxiety and depressive disorders, school problems, symptoms of physiological hyperarousal and changed attitudes about the self, world, and future. Psychological trauma associated with exposure to an overwhelming stressor may be etiological for a number of psychiatric disorders, i.e., Mood Disorders, Attention Deficit Hyperactivity Disorder, Phobic Disorder, Anxiety Disorders, Dissociative Disorders, Substance Abuse, Conduct Disorder, Somatoform Disorders, and Personality Disorders such as Borderline Personality Disorder, etc.

Only recently have investigators attempted to delineate between the short-term and long-term psychological effects associated with exposure to disaster. Increasing attention has been focused on the acute psychological and psychiatric comorbidity found with the core post-traumatic symptomatology. There is evidence that the prevalence of post-traumatic stress symptomatology in children is high in the immediate aftermath of disaster and remains particularly high for females for sustained periods of time. While initially other indices of behavioral and emotional distress may be dampened, there is a rapid rebound with increasing severity and diversity of emotional and behavioral problems over time.

The increasing severity and diversity of psychological and psychiatric symptom configurations appear to be related to the unfolding of the "secondary stressors." These stressors include losses related to the destruction of the community, loss of home, unemployment, marital and family discord, disruption of peer groups, economic hardship, slow rates of recovery and restoration, exposure to "traumatic reminders" and increased indices of social maladjustment, i.e., school absenteeism, divorce, child maltreatment etc. Subsequent to the Armenia earthquake of 1988, for example, children manifested significant psychiatric comorbidity to include PTSD, PTSD-depression, depression and separation anxiety. Long-term post-traumatic stress related pathologies include chronic PTSD, and comorbid mental and physical disorders, personality and developmental disturbances, and age appropriate expressions of a lack of well-being and general

dissatisfaction. In follow-up studies of children after the Buffalo Creek disaster, two years after the disaster, 37% of the children and adolescents were given a "probable" diagnosis of PTSD and 17 years after the disaster 7% of those re-evaluated had PTSD; all of these individuals were women. The risk factors that best predicted continuing post-traumatic symptomatology for these children and adolescents were degree of life threat, parental psychopathology, female gender and an irritable and/or depressed family atmosphere. Additionally, there is a spectrum of "adaptational possibilities" found in children 20 years after the Buffalo Creek Disaster which was related to the family's initial response to the disaster; psychopathology in the children resonated with parental psychopathology.

The increasing awareness of psychological and psychiatric comorbidity associated with the stress response syndromes has resulted in increasing recognition that mental health personnel sensitive to the complexity of biopsychosocial issues have to be available in the immediate aftermath of disaster. There are at least five categories of child psychiatric victims after disaster:

- Children who were previously defined as psychiatrically disturbed and who were receiving psychotropic medication for conditions such as Psychotic Disorders, Mood Disorders, Attention Deficit Hyperactive Disorder, Tourette's, Obsessive Compulsive Disorder and whose conditioned worsened due to the lack of access to medications
- Children who had previously existing psychosocial and psychiatric problems which were exacerbated by the additional stress of the disaster with increased psychiatric comorbidity
- Children who under the impact of the stressors associated with disaster develop classical post-traumatic stress symptomatology,
- Children who respond to the disaster with psychiatric comorbidity; depression, anxiety and somatoform disorders, i.e., vague pains, gastrointestinal complaints, headaches, dermatitis, conversion reactions etc.
- Children who upon exposure to the continuing psychosocial and familial adversity after the disaster begin to manifest emotional and behavioral problems such as psychophysiological manifestations of stress, i.e., asthma, gastrointestinal disorders, vague aches and pains, symptoms of depression, suicidal behavior, aggressive dyscontrol problems, Attention Deficit Hyperactivity Disorder, antisocial behavior, and Substance Abuse etc.

The role of the child psychiatrist is many faceted. Initially, the child psychiatrist trained in the biopsychosocial dimensions of emotional and behavioral problems will act both in the role of primary care physician and discerner of the potential biological facets underlying psychological problems. His expertise in the assessment and differential diagnosis of medical as well as psychiatric conditions enables him to recognize psychiatric and psychophysiological reactions requiring immediate medical-psychiatric treatment. It is a maxim of military medicine that the most qualified physician is the one most skilled to perform triage, sorting out patients to appropriate avenues of intervention.

The positioning of the most skilled person at the entry point into the health care system ensures that medical/surgical emergencies are not missed and that resources are used efficiently and effectively.

The child psychiatrist's training in multiple systems makes him particularly skilled to interface with the medical-community-school milieu both as a consultant and a resource. It is apparent that in the post-disaster period there is an increasing widening of emotional and behavioral problems requiring the attention of child psychiatrists sensitive to the biological, psychological and social dimensions of the stress response syndromes (biopsychosocial model).

The Bereaved

Psychiatrists are in a special position to assist in understanding normal and pathological responses to loss and to facilitate healthy recovery. While it may be obvious to most people that someone would grieve the loss of a friend or family member, the impact of the loss of pets and possessions may not be as readily recognized or appreciated. The psychiatrist can assist in distinguishing between uncomplicated bereavement and the development of a major depressive disorder (in which there may be no difference in criteria other than the length of time). The use of antidepressant and sleep medications may be of benefit for some patients.

While there is substantial literature on the loss of a spouse and its effect on the survivor's immune function, less is known about the impact of the devastation of a community on residents' immune function. The widespread destruction of homes and neighborhoods, sudden unemployment, displacement, and the effect of other losses on immune and endocrine function may amplify the individual's physiological, behavioral and psychological responses.

Disaster Workers

A great deal of attention in disaster work lately has focused on the role of debriefing disaster workers in the aftermath of a traumatic event. There are many training courses available on debriefing. It must be remembered, however, that one should think of debriefing as only one intervention in a vast armamentarium. Early primary intervention through consultation should be a priority. One of the universal stressors associated with disasters is exposure to the dead and the grotesque. Proper training for individuals involved in areas such as search and rescue, body handling, and mortuary operations can help diminish overwhelming exposure. For example, the psychiatrist can provide consultation to inexperienced leaders that those involved in handling the dead and mutilated should avoid looking at faces, hands, personal effects and other things which intensify identification with the dead and therefore increase the risk of psychological sequelae.

A strikingly common problem in disaster workers (including medical personnel) is overdedication. Consultation must emphasize the necessity of ensuring that all personnel (including leaders) receive adequate recovery time for sleep, nutrition, and respite. Fatigue and exhaustion ultimately take a toll on effectiveness, increasing the probability of accidents and mistakes, and may diminish healthy coping mechanisms. The psychiatrist should also stay alert to the tendency for some individuals to respond to the physical and psychological stressors by increasing their use of alcohol and tobacco products. Similarly, the psychiatrist must watch for symptoms of withdrawal in substance dependent individuals who do not have access to their particular substance. Other organic brain syndromes can result from dehydration, exposure to toxins, etc. The psychiatrist is uniquely trained to assist in the differential diagnosis and treatment of these conditions.

As physicians, psychiatrists are in a special position to understand the stressors of attending to the physically injured and grotesque. Psychiatrists' personal experiences in their medical training allow them the capacity to listen to stories about the complex thoughts, feelings, and behaviors associated with working with the sick and injured and to sensitively inquire about areas which non-medical personnel may not consider.

BIOMEDICAL PERSPECTIVES

Sleep

Mental Operations

Psychiatrists have a role in the management of sleep before, during, and after disasters. Before disasters, effective management of sleep to sustain alertness and performance may serve, if the disaster looming is a function of human error, to prevent the disaster. During disasters, effective sleep management increases resiliency and coping in the face of a rapidly changing situation. After disasters, effective sleep management will sustain emergency personnel, speed structural recovery, and facilitate the treatment of the sick and injured. Finally, there is the special case of managing sleep in acute traumatic stress casualties. (This special case is treated later in this section under "medication").

Adequate sleep sustains mental performance. With less than adequate sleep, performance degrades over time. Total sleep deprivation degrades human mental performance by 25% for each succeeding 24 hours awake. The recuperative value of sleep depends primarily upon the sleep's duration and continuity. The effects of sleep deprivation on performance are based in robust changes in brain physiology. Using Positron Emission Tomography (PET), it has been demonstrated that sleep deprivation decreases brain activation. The greatest decreases occur in those areas of the brain involved in complex mental operations, exactly those mental operations necessary for effective coping and adaptation.

Medications and Sleep

In laboratory studies comparing the effects of several stimulant drugs on performance during sleep deprivation, caffeine, given in doses of 300-600 mg, improves performance for 8-10 hours after 48 hours without sleep and does so without undesirable side effects. Both triazolam (Halcion®) and zolpidem (Ambien®) can induce sleep in non-sleep conducive (operational) conditions. However, both have drug-hangover effects that impair performance during subsequent waking. Flumazenil (Mazicon®) given upon awakening, reverses these drug-hangover effects and restores full alertness and performance. Flumazenil is not in itself a stimulant. The potential is there to develop a dual drug system (e.g., triazolam to induce sleep, followed by flumazenil on awakening to restore performance) for use in inducing recuperative sleep during continuous operations. Such a system, implemented by psychiatrists during a disaster, would ensure good duration and continuity of sleep in emergency personnel.

A variety of non-invasive, unobtrusive techniques to monitor alertness real-time, including embedded reaction time tests, on-line, real-time EEG analysis, eye tracking, and pupillometry are under development. By testing and cross-comparing these technologies it will be possible to develop a system to warn personnel before, during, and after disasters of imminent performance failures.

Perhaps the first area in which psychiatrists should be cognizant is that patients with medical and psychiatric illness may not have an adequate supply of their medications. This is a primary consideration in the evaluation of altered mental states. Proactively, psychiatrists in high risk areas for natural disasters should encourage and assist patients in the development of a special disaster bag which contains at least a week's supply of medications and salient medical information for use in emergencies.

Psychiatrists have a role in research on pharmacological agents in the management of stress casualties among disaster victims, and in the actual clinical pharmacological management of such casualties. At present, there is no conclusive evidence that any pharmacotherapeutic agent is of benefit in the treatment of acute traumatic stress reactions or in the prevention of Post-Traumatic Stress Disorder (PTSD). Antipsychotic medications and long-acting benzodiazepines have no role in the treatment of traumatic stress casualties or the prevention of PTSD. Anecdotal observations by the Israeli Defense Force during the 1973 Arab-Israeli War and the 1982 War in Lebanon suggest that the use of these medications in the treatment of combat stress reactions, while effective in symptom reduction over the first few hours, interferes with coping and readjustment, further debilitating the soldier, reducing the likelihood of full recovery over the 2-3 days post-trauma, and creating longer term disability. It was observed that mental health professionals in the Gulf War were poised to use benzodiazepines liberally had there been large numbers of combat stress casualties. Benzodiazepines are effective in reducing anxiety and promoting sleep. However, it is questionable whether

pharmacologic relief from anxiety is needed for acute stress casualties, especially if it comes at the cost of impairing coping and adaptation. That mental health personnel in the Gulf War were eager to administer long-acting benzodiazepines reflects their beliefs that these agents were therapeutically indicated and that combat stress casualties would be unmanageable if not sedated even while awake. Both beliefs are unfounded. If sleep induction is needed, then a short-acting, sleep-induction/rapid reawakening drug combination might be useful. Most contemporary short-acting, sleep-inducing drugs interact with the benzodiazepine receptor, and while effectively inducing sleep, being short-acting, leave residual sedation which impairs cognitive performance (particularly new learning) and may thus impair resiliency, adaptation, and coping, and worsen a patient with acute traumatic stress reaction. Short-acting, sleep inducing drugs, triazolam (Halcion®) and zolpidem (Ambien®) are effective in inducing sleep in non-sleep conducive (operational) conditions. However, even these short-acting drugs have drug-hangover effects that impair performance during subsequent waking. As described above, a dual drug system (e.g., triazolam or zolpidem to induce sleep, followed by flumazenil on awakening to restore performance) could be used to induce recuperative sleep without subsequent impairment of resiliency, coping, learning, and adaptation.

Medications

The SSRIs may have a beneficial effect in treating acute stress casualties, especially if combined with event reconstruction and debriefing. These agents are, relative to older antidepressants, free from side-effects, including performance impairment. To our knowledge, they have not been tried in the management of acute stress reaction or the prevention of Post-Traumatic Stress Disorder. In clinical settings, these agents appear to improve day-to-day performance and increase resiliency in depressed, demoralized individuals. Needed are prospective, randomized, double-blind studies of their efficacy when used immediately post-trauma in exposed individuals whether they are at that point symptomatic or not. Other agents may prove effective in reducing the risk of an acute stress reaction progressing to chronic PTSD. Controlled, prospective studies will provide information upon which to base recommendations for clinical practice.

Nutrition

Because major disasters disrupt community infrastructure, there are significant challenges posed in the area of nutrition. Attention should be paid to ensuring that survivors have access to safe drinking water to maintain hydration. The loss of refrigeration and limited ability to replenish food stocks restrict the types of foods that can be provided with resulting changes in diet. These dietary shifts may contribute to the development of diarrhea or constipation which may pose health hazards for vulnerable populations. Special attention must be paid to the ability of those on special diets, i.e., persons with diabetes, hypertension, etc. to obtain appropriate sustenance. In the consultative mode, the psychiatrist must continually remind leaders to ensure that disaster workers maintain adequate hydration and eat regularly.

THE PSYCHIATRIST AS PHYSICIAN: CARE FOR THE MEDICALLY INJURED/ILL

Acute Disaster Phase

The psychiatrist has a broad view of medical and psychiatric etiologies of alterations in human behavior. Many medical etiologies effect changes in behavior. Head injuries need to be recognized and triaged for timely surgical or neurological assessment and intervention. Due to the chaotic and disorganizing effects of disasters, initial triage is often inefficient and groups that look similar will be mixed. Intoxication and withdrawal phenomena, such as delirium tremens, commonly alter mental status. Differentiating between the etiologic chemical agents involved is essential to direct the patients to appropriate treatment. Infections such as CNS malaria, hepatitis, and tuberculosis, though much more prevalent in the third world, remain a consideration of which the clinician needs to be vigilant. It must also be remembered that disasters such as earthquakes may cause increased spread of pathogens such as cryptococcus.

Common things happen commonly. Dehydration and fatigue, in both victims and rescue workers, can significantly degrade adaptation and performance. The mental health interventions of water and rest are simple and curative. The military literature is replete with vignettes of how adequate water intake, rest, and respite are necessary for continued effective functioning in high stress environments.

Additionally psychiatry contributes to understanding the co-morbidities which increase with physical injury, such as the twofold increase in the risk for Post-Traumatic Stress Disorder in those who are physically injured.

In the initial stages after a disaster, efficient triage of casualties is the major priority. As noted earlier, the disaster-trained psychiatrist is the mental health expert ideally suited to triage because of his ability to distinguish medical and surgical conditions presenting as alterations in behavior or cognition. After triage assessments, acute definitive care can be delivered. The first interventions to improve the recovery environment are encouraging rest, respite, providing information, and locating family members as well as the standard psychiatric intervention of letting those exposed tell their stories to organize the extraordinary events that have occurred.

While individuals from other mental health disciplines can seek out clinical experiences in working with the medically ill and dying, all psychiatrists are exposed to these difficult circumstances as part of their medical training. Intensive and critical care settings as well as burn and rehabilitation units pose special challenges for clinicians and require special training and experience. Psychiatrists can play a central role in supporting patients and their families as well as nursing and other care providers.

In the aftermath of a disaster, patients with somatoform disorders or somatizing mental defenses may present in increasing numbers for reassurance to already over-burdened emergency services. Providing information during triage may effectively treat this population while simultaneously utilizing resources more efficiently. Another common behavior of which to be alert is patients' self-medication with alcohol and other substances for anxiety and depression symptoms.

Subacute or Hospital Phase

Identifying and treating high risk groups in the days and weeks immediately following a disaster targets interventions to maximize benefits with limited resources. Victims in the hospital with physical injury have a clear marker of significant life threat, an essential component of the stressor criteria of PTSD and ASD, and are at higher risk for Post-Traumatic Stress Disorder. After surviving, rehabilitation becomes the next task of the patient, assimilating the changes of body and self-image after the trauma. Consultation psychiatrists have great experience in helping patients understand their illness. Translating medical terminology into lay terms and preparing the patient to cooperate fully in their rehabilitation are important tasks. For example, amputees have multiple obstacles they must overcome to effectively engage in rehabilitation. Pain control and mourning the loss of a limb are primary issues faced. Then, cooperation with rehabilitation to build compensatory function in remaining limbs and to begin to work with a prosthesis becomes important. The maintenance of hope and the capacity to cooperate fully during recovery is essential. The professional element of support during this time period is equally critical for those at risk. The emotional numbing of a Post-Traumatic Stress Disorder or the social withdrawal accompanying a Major Depressive Disorder can have a significant impact on the patient's ability to use rehabilitative resources as well as family supports during this time of increased stress.

Recovery Phase

Wounds, people, and communities heal. Managing the way in which the trauma is assimilated into the individual or community can affect both the rate and quality of the healing. Psychiatry is a rehabilitative specialty that is constantly helping in the process of assimilation.

Trauma alters the recipient's sense of himself. The victim's basic assumptions of life (i.e., invulnerability, justice, physical intactness) are challenged by the extraordinary events of a disaster. The trauma does not go away. The ways in which trauma shapes the victim's life and the processing of these negative experiences can be managed to change feelings of helplessness and defeat into a sense of mastery and competence. Psychiatric care should help share what is learned from those who gain a mastery over events and aid those who are defeated and reexperiencing helplessness to have a more competent response.

INTERNATIONAL

Medicine has an international valence and, therefore, in cultures which are not receptive to mental health professionals *per se,* a psychiatrist can gain entree by virtue of his medical/osteopathic degree. In such countries, the psychiatrist's consultation to other physicians can facilitate the provision of sound psychiatric treatment. A particular focus of concern should be cultural tendencies to over- or undermedicate individuals with psychological and behavioral responses to trauma. For example, the psychiatrist can be of particular help in the differential diagnosis of PTSD versus psychosis in settings in which early dissociative symptoms might be mistaken for a psychotic disorder and overly medicated. Psychiatrists attuned to the cultural norms of the society are well-positioned to assist in recognizing somatic presentation of psychiatric conditions as well as medical/surgical illness presenting as disturbances of mood, thought or behavior.

NUCLEAR /BIOLOGICAL/CHEMICAL (NBC) ACCIDENTS AND TERRORISM

The management of fear created by nuclear/ biological/chemical (NBC) accidents and terrorism is a key principle in responding to such disasters. To many, the thought of being exposed to an invisible agent is more frightening than the prospect of physical injury or death by conventional weapons. In the course of their medical education, psychiatrists are exposed to terror in a wide variety of settings: the acutely injured or those in refractory pain, the terminally ill, those lost in another reality and so forth. Cognizant of the pathophysiology created by various agents and of the differential diagnosis of acute and chronic toxic exposure, psychiatrists have the ability to comprehend the medical issues and to communicate them in a manner which reduces rather than heightens anxiety and fear. Assistance in managing fear is useful not only for lay people, but also for medical personnel. Recent experiences with the flight of medical caregivers from Ebola-infected patients and earlier problems in caring for HIV-infected patients underscore the importance of assisting medical personnel to maintain a task focus through managing fear effectively.

Psychiatrists are uniquely positioned to evaluate changes in physical and mental function. By virtue of their medical training, they have the ability to observe and consider the possibility of NBC as an etiology for illness. This is of particular importance in terrorism in which the deployment of both chemical and biological agents to cause immediate and delayed actions through contamination and disease transmission is a cause for concern. The psychiatrist's ability to think about illness from an epidemiological perspective can play a critical role in the rapid detection and intervention for such complicated exposures.

The use of explosives is perhaps the most common weapon of terror used by terrorists. The psychiatrist's ability to work with the injured and their families in a medical setting is a valuable skill. Similarly, the psychiatrist's provision of support to the rescue and hospital personnel in the wake of such severe trauma facilitates the recovery of both the injured and their friends and family.

As in the case of natural disasters, the psychiatrist's participation in education of other medical personnel in the recognition and treatment of psychiatric disorders in those seeking attention for medical problems is an important contribution.

MANAGEMENT OF INFORMATION

The coordinator of disaster efforts should establish a channel of communication with the media to be certain that there is proper and efficient communication with the public concerning the disaster, all rescue efforts, and the aftermath. The psychiatric consultant can provide advice to the coordinator on certain issues which may be helpful in shaping the nature of the communications which are given to the media. The psychiatrist can also make it known that he or she will be available to be a resource to the media and/or be interviewed concerning mental health issues related to the disaster and its aftermath. The psychiatric consultant to the media should consider the following issues:

Rumors and Panic

A major event such as a disaster inevitably brings forth rumors about the cause, consequences, number of deaths, casualties and expected reoccurrence of the disaster. Responsible experienced members of the media are usually quite careful to be especially accurate in these situations. However, less experienced reporters or sources to the media might not readily distinguish between speculative rumors as compared to verified facts.

Attempts to conceal facts and situations, no matter how horrifying or tragic, stand a good chance of being magnified by unofficial rumors which leak around the official spokesperson. The public will be much less likely to develop or continue panic behavior if they believe they are receiving truthful information from reliable sources. Most helpful is to have such information analyzed by a credible expert who can put any frightening information into a proper perspective.

Death Notification

The role of the media is to announce the names of persons injured and killed in a disaster. The media representatives will usually respect a request to delay for a short time publishing or announcing actual names of persons until death notification to the family is made, especially if they believe they are being given accurate details of the number of casualties and the circumstances. The psychiatrist can provide important input to the media on the psychological impact of both of the above topics.

Public Education

In the aftermath of a disaster, the mental health experts will want to prepare primary victims and secondary victims of the disaster as to what to expect in regard to the development of symptoms of acute stress and post-traumatic stress. This includes providing information to victims' family members, parents of children involved, relatives of emergency rescue personnel, employers, etc. Even people who have only heard about the disaster may be troubled by nightmares and other bothersome symptoms. Therefore, this information will be useful to the general public as well as to specific groups which are directly involved. The media, both print and electronic, will want to do stories about these issues. They will also want to do stories at the anniversary of an event. The psychiatrist should be a resource for these stories and also be available for interviews.

The media should also be provided, in a timely manner, the time and location of any open counseling sessions or debriefing sessions that are being set up for specific groups or for the general public.

Post-Traumatic Stress Symptoms of Media Personnel

Members of the media will expose themselves as much as possible to the "event". They will witness, examine, film, and tape all the horrifying events and interview victims. Constant frequent exposure to such events without much sleep is quite common. This includes people behind the scene who edit the tape, rewrite stories, view pictures, etc. Members of the media are candidates for the development of Acute Stress and Post-Traumatic Stress Disorders.

This is a neglected population that will benefit from group discussion, debriefing and being made aware of the effects of their work on themselves and their families. Since psychiatrists may be involved as resources to the media about mental health issues concerning disaster, they may be in a position to have contacts to arrange such meetings for the media members, themselves.

CONCLUSION

The Psychiatrist As Physician

Psychiatrists bring a wide range of skills and expertise useful for preparing for and responding to disasters. In the aftermath of a disaster, the medical skills of the psychiatrist are most valuable. Basic first aid and CPR can prove very helpful. A calm, professional approach helps prevent panic. Assistance at triage stations and leadership to coordinate an organized response may prove lifesaving. The ability to distinguish between common reactions of hyperarousal from pathological ones ensures appropriate management of individuals.

Medical training prepares psychiatrists for recognizing illness and developing differential diagnoses. This fund of knowledge is helpful in identifying the etiology(ies) of altered mental status, especially in the aftermath of trauma where medical illness or injury can be inappropriately diagnosed as psychiatric and vice versa. Knowledge of pharmacology and experience with anticholinergic agents is valuable in responding to chemical agents, whether delivered by terrorists or through industrial accidents. Microbiology and virology education helps the psychiatrist recognize and appropriately treat or refer biological casualties. The psychiatrist's role as a medical authority facilitates communication across a wide range of professional boundaries: interacting with community officials, disaster response agencies, police, fire and rescue, school systems, hospital staff, and medical personnel, to name but a few. The psychiatrist's familiarity with an epidemiological approach to understanding disease in a group context is invaluable in the context of disasters. This model is a useful tool in identifying high risk groups for psychological distress based on exposure to trauma (e.g., body retrieval workers), vulnerable groups such as the elderly and children, and "vectors" of disease such as communicators of fear via rumor or media. The psychiatrist's use of a developmental model for human behavior assists in helping individuals and in recognizing their vulnerabilities and resilience throughout the life cycle. Similarly, knowledge of the natural history and epidemiology of disease is helpful in correctly identifying all factors contributing to an individual's physical and/or emotional distress.

Expertise in Human Behavior

In addition to general medical assessment and interventions, the psychiatrist brings a number of specialized medical skills. The psychiatrist is knowledgeable of the assessment and differential diagnosis of disorders of cognition, affect, and behavior. He/she is especially helpful in situations in which psychiatric disorders occur co-morbidly with medical conditions. Facility with medical, psychological and socio/cultural interventions allows the psychiatrist to choose from a broad armamentarium of treatments. In addition to prescribing medications for psychiatric disorders, psychiatrists also provide symptomatic relief as appropriate for sleep problems and hyperarousal. Usual attention must be paid to the potential of organic brain disorders and suicidal/homicidal ideation.

Consultation

Psychiatrists have a number of educational experiences which provide them with expertise in disaster consultation. Child training in the general residency or in fellowship provides a background in consulting to non-medical organizations and leaders such as school principals, teachers, and guidance counselors. Consultation/liaison and Emergency Psychiatry training provide a firm foundation in working with the medically ill and their primary treatment team, chaplains, families and others in a hospital setting. It also exposes psychiatrists to experience with acute emergencies and a broad range of organic brain disorders.

Psychiatrists are well-suited to provide consultation to disaster organizations such as the Red Cross, FEMA and emergency systems as well as community leaders. The physician's medically based connections with these institutions are very helpful in gaining entree. The medical identity also facilitates participation across international boundaries.

Psychiatrists enjoy special psychotherapeutic skills useful in disasters. Experience in working with injured patients and the management of associated hyperarousal are very helpful following catastrophes. Similarly, psychiatrists' ability to deal with issues of death and dying are prominent also in disaster work. The importance of sleep management and the judicious use of medications is an important contribution.

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APPENDIX A

Disasters are not always nonpartisan events. Consider floods, for example: people who build on flood plains because the land is inexpensive represent a group with special characteristics such as a tendency toward a lower socioeconomic level and all the special personal characteristics of individuals willing to live on a flood plain. Groups of individuals exposed to cataclysmic events may share certain characteristics associated with their own sets of vulnerabilities and protective factors from effects of disaster. Examples of such special populations include combat veterans (Helzer, Robins, & McEvoy, 1987), children, and rescue workers. Therefore it is important to consider the characteristics of the affected population when considering disaster-related activities.

The number and scope of disaster-affected persons may be larger than realized, and may include not only the individuals trapped in the immediate disaster situation, but also their family and close friends, peers and other acquaintances, rescue workers, disaster relief (e.g., Red Cross, mental health volunteers) and agency personnel (e.g., insurance adjusters), if not to some degree the entire community. In some disasters such as national catastrophies (e.g., the Oklahoma City bombing) the affected population may also include regional, national, and international news audiences who may be deeply affected by the intensity of live video accounts. The affected population may also include individuals inconvenienced by a disaster's physical effects, (e.g., blocked roads and loss of electrical power), but also those affected by other types of disaster effects such as economic losses (e.g., tourist trade curtailed on tropical islands due to recent hurricanes).

Different types of disasters are thought to elicit different responses from affected populations (Gleser, Green, & Winget, 1981; Beigel & Berren, 1985; Baum, Fleming, & Davidson, 1983). Technological accidents may evoke higher rates of psychiatric disorders than natural disasters (Baum, Fleming, & Davidson, 1983), although willful acts of terrorism are thought to evoke the most severe reactions (Weisaeth & Eitinger, 1993). Disaster-specific contributors to severity of impact may include the associated degree of terror (i.e., threat to life or limb) and horror (i.e., grotesque scenes), suddenness of onset, duration of impact, intensity of impact, degree of damages (e.g., number of casualties; personal injury and property damages), and grief over loss of loved ones (Green, 1990; Green, 1993). Disasters with several of these properties are thought to promote the highest risk for severe psychiatric impact.

Besides predisposing characteristics of populations exposed to disasters, pre-existing individual considerations affect personal response to traumatic events. In disaster studies, the personal factor most predictive of psychiatric problems after the event is pre-existing psychiatric illness, which is highly predictive of post-disaster psychiatric illness (North, 1995). With increasing magnitude of the disaster agent and increasing exposure to it, however, personal vulnerability appears to be less predictive, as more individuals without previous psychological problems are affected (Hocking, 1970; Shore, Tatum, & Vollmer, 1986; Feinstein & Dolan, 1991; Breslau & Davis, 1992; Smith, North, & Spitznagel, 1993). Other personal predictors of risk for post-disaster psychiatric problems include loss of a loved one, litigation, female gender, advanced age, and lower socioeconomic status (Gleser, Green, & Winget, 1981; Moore & Friedsam, 1959; Lopez-Ibor, Jr., Canas, & Rodriguez-Gamazo, 1985; Steinglass & Gerrity, 1990; Weisaeth, 1985; Kasl, Chisholm, & Eskenazi, 1981; Leopold & Dillon, 1963).

The psychiatric disorder classically associated with disasters is post-traumatic stress disorder (PTSD). Studies of disasters have reported widely varying rates of PTSD, as low as 2% following a volcano (Shore, Tatum, & Vollmer, 1986), 4% after torrential rain and mudslides (Canino, Bravo, Rubio-Stipec, & Woodbury, 1990), and 4%-8% following flooding and exposure to dioxin contamination (Smith, Robins, Przybeck, Goldring, & Solomon, 1986). Other researchers have reported much higher rates of PTSD: 44% after a dam break and flood (Green, Grace, Lindy, Gleser, Leonard, & Kramer, 1989), 53% following bushfires (McFarlane, 1986), and 54% following an airplane crash landing (Sloan, 1988). Although only a minority of survivors of most disasters develop diagnosable cases of PTSD, some symptoms may be abundant or even universal (Edwards, 1976; Boyd, 1981; Smith, Robins, Przybeck, Goldring, & Solomon, 1986; Breslau & Davis, 1987; North & Smith, 1990; Norris, 1992; North, Smith, & Spitznagel, 1994).

Research indicates that other psychiatric disorders often accompany PTSD in disaster survivors. The most prevalent co-existing disorders appear to be major depression and anxiety disorders (Smith, North, McCool, & Shea, 1990; North & Smith, 1990). Given the well documented potential for improvement with treatment, these disorders should not be overlooked in evaluation of disaster survivors for post-traumatic symptoms. Because of the significant association of post-disaster psychopathology with predisaster psychiatric illness, a complete psychiatric past history of these disorders as well as substance abuse should be taken and considered carefully in assessment and planning of treatment for disaster survivors.

The natural history of PTSD is that it often begins within hours, and usually within a few days, of the traumatic event. Delayed onset (by definition, beyond six months) is uncommon, although cases beginning later, as many as years after the event, have been described. A study of the Buffalo Creek dam break and mudslides found that 20% of all PTSD cases identified were delayed cases (Grace, Green, Lindy, & Leonard, 1993). Helzer's group (Helzer, Robins, & McEvoy, 1987) found that 16% of post-Vietnam PTSD cases had delayed onset.

PTSD symptoms typically begin to fade within weeks of the event, although this can vary considerably. Helzer's group (Helzer, Robins, & McEvoy, 1987) found that about half of cases in the general population resolved by six months. Chronic PTSD with symptoms persisting for many years, however, has also been described, including one-third of the cases persisting for at least three years in the Helzer et al. (Helzer, Robins, & McEvoy, 1987) study. Chronicity has been predicted by the presence of pre-existing psychiatric disorders, neuroticism, a history of early separation from parents in childhood, and family history of anxiety or antisocial behavior, as well as litigation (North, 1996). The most marked chronicity in PTSD sufferers has been observed in prisoners of war, among whom 50% to 90% have been found to have active PTSD after forty years (Sutker, Allain, & Winstead, 1993; Engdahl, Speed, Eberly, & Schwartz, 1991).

Not to be overlooked is the resilience of people after disasters. In spite of the overwhelming prevalence of PTSD symptoms after extreme traumas, the majority of survivors do not become psychiatrically ill. Reassuring these individuals that their symptoms represent normal responses to extreme events, and helping them re-establish their equilibrium, goes a long way toward helping them cope with such extreme situations.

Gender Effects

There are few data pertaining specifically to women following major disasters. The field of psychiatric response to disaster is relatively new, as is the concept of comparing women to men; hence, the marriage of the two phenomena has rarely occurred in the research literature to date. In the general population, however, it is well documented that women are more prone to depressive and anxiety disorders than are men, although men greatly outpace women in substance use disorders (Weissman, Bruce, Leaf, Florio, & Holzer, III, 1991; Blazer, Hughes, George, Swartz, & Boyer, 1991; Helzer, Burnam, & McEvoy, 1991; Anthony & Helzer, 1991; Helzer, Robins, & McEvoy, 1987; Breslau, Davis, Andreski, & Peterson, 1991). Therefore, it is not unexpected that in extreme situations such as disaster, women, compared to men, might be especially prone to depressive and anxiety disorders, including PTSD (as opposed to substance abuse for men). In numerous disaster studies, women have been shown to have significantly higher rates of post-disaster psychiatric disorders than men (Shore, Vollmer, & Tatum, 1989; Kaltreider, Gracie, & LeBreck, 1992; Palinkas, Petterson, Russell, & Downs, 1993; Grace, Green, Lindy, & Leonard, 1993; Smith, North, & Spitznagel, 1993; Steinglass & Gerrity, 1990; North, Smith, & Spitznagel, 1994). Women are found to be more likely than men to visit physicians and to take medication after disasters (North, Smith, & Spitznagel, 1994). Therefore, health professionals may represent a potentially more useful source of post-disaster intervention for women than for men.

APPENDIX B

Children

The psychological effects of natural disaster on children and adolescents has become an emerging focus of study (Lipovsky, 1991). In recent years reports have been published on the psychological responses of children and adolescents to hurricane, fire, earthquake and flood (Bloch et al., 1956; Newman, 1976; Green et al., 1991, 1994; Bradburn, 1991; Burke et al., 1986; Yacoubian et al., 1989; Garrison et al., 1993; Honig et al., 1993; McFarlane, Policansky & Irwin, 1987; Pynoos et al. 1993; Shannon et al., 1994; Shaw et al., 1995). The spectrum of post-traumatic stress symptomatology in children and adolescents generally parallels the psychological responses of adults to overwhelming disaster. Acute psychological responses to natural disaster include trauma specific fears, fears of recurrence, regressive behavior, externalizing symptoms, behavioral reenactments, post-traumatic play, avoidance of "traumatic reminders", detachment, anxiety and depressive disorders, school problems, symptoms of physiological hyperarousal and changed attitudes about the self, world and future (Bloch et al., 1956; Burke et al., Green et al., 1991, 1994; 1986; Newman, 1976; Pynoos et al, 1987; Terr, 1981, 1983). Psychological trauma associated with exposure to an overwhelming stressor may be etiological for a number of psychiatric disorders i.e. Major Affective Disorders, Attention Deficit Hyperactivity Disorder, Phobic Disorder, Anxiety Disorders, Dissociative Disorders, Substance Abuse, Conduct Disorder, Somatoform Disorders, Personality Disorders such as Borderline Personality Disorders etc. (Terr, 1991, Breslau, 1991, Hubbard et al., 1995)

It is only recently that investigators have begun to attempt to delineate between the short term and long term psychological effects associated with exposure to disaster. (Mc Farlane, 1987; Lipovsky, 1991, Pynoos, 1993, Shaw, et al., 1995) Increasing attention has been focused on the acute psychological and psychiatric comorbidity found with the core post-traumatic symptomatology. (Breslau, 1991; Saigh, 1991; Sullivan, et al., 1993; Goenjian et al., 1995) There is evidence that the prevalence of post-traumatic stress symptomatology in children is high in the immediate aftermath of disaster and remains particularly high for females for sustained periods of time (Green et al., 1991,1994, Shaw et al., 1995). Shaw et al., (1995) suggested that while initially other indices of behavioral and emotional distress may be dampened there is a rapid rebound with increasing severity and diversity of emotional and behavioral problems over time (McFarlane, 1987, Shaw et al., 1995).

The increasing severity and diversity of psychological and psychiatric symptom configurations appear to be related to the unfolding of the "secondary stressors" associated with the inventory of losses related to the destruction of the community, loss of home, unemployment, marital and family discord, disruption of peer groups, economic hardship, slow rates of recovery and restoration, exposure to "traumatic reminders" and increased indices of social maladjustment i.e. school absenteeism, divorce, child maltreatment etc. Goenjian et al. (1995) found that subsequent to the Armenia earthquake of 1988, children manifested significant psychiatric comorbidity to include

PTSD, PTSD-depression, depression and separation anxiety. Pynoos (1993) has noted that the long term post-traumatic stress related pathologies include "chronic PTSD, comorbid mental and physical conditions, develop-mental and personality disturbances, and age appropriate indications of dissatisfactions and lack of well being". In follow-up studies of children after the Buffalo Creek disaster, Green et al. (1991, 1994) noted that two years after the disaster, 37% of the children and adolescents were given a "probable" diagnosis of PTSD and that 17 years after the disaster 7% of those re-evaluated had PTSD and all of these individuals were women. Green, et al. (1991) found that the risk factors that best predicted continuing post-traumatic symptomatology was degree of life threat, parental psychopathology, being female and an irritable and or depressed family atmosphere. Honig et al., (1993) observed that there is a spectrum of "adaptational possibilities" found in children 20 years after the Buffalo Creek Disaster which were related to the family's initial response to the disaster and that psychopathology in the children resonated with parental psychopathology.

The increasing awareness of psychological and psychiatric comorbidity associated with the stress response syndromes has resulted in increasing recognition that mental health personnel sensitive to the complexity of biopsychosocial issues have to be available in the immediate aftermath of disaster. There are at least five categories of child psychiatric victims after disaster: 1) Children who were previously defined as psychiatrically disturbed and who were receiving psychotropic medication i.e. Psychotic children, Mood Disorders, Attention Deficit Hyperactive Disorder, Tourette's, Obsessive Compulsive Disorder and whose conditioned worsened due to the lack of access to medications; 2) Children who had previously existing psychosocial and psychiatric problems which exacerbated under the additional stress of the disaster with increasing psychiatric comorbidity; 3) Children who under the impact of the stressors associated with disaster develop classical post-traumatic stress symptomatology, 4) Children who respond to the disaster with psychiatric comorbidity to include depression, anxiety and somatoform disorders i.e. vague pains, gastrointestinal complaints, headaches, dermatitis, conversion reactions etc.; and 5) Children who upon exposure to the continuing psychosocial and familial adversity after the disaster begin to manifest emotional and behavioral problems such as psychophysiological manifestations of stress i.e. asthma, gastrointestinal disorders, vague aches and pains, symptoms of depression, suicidal behavior, aggressive dyscontrol problems, Attention Deficit Hyperactivity Disorder, antisocial behavior, and Substance Abuse etc.

The role of the child psychiatrist is many faceted. Initially the child psychiatrist trained in the biopsychosocial dimensions of emotional and behavioral problems will act both in the role of primary care physician and discerner of the biological substrate facets of psychological problems. His expertise in assessment, differential diagnosis and biological substrate variables enables him to recognize psychiatric and psychophysiological reactions requiring immediate medical-psychiatric treatment. It is a maxim of military medicine that the most qualified and credential physician is the one most skilled to do triage and sort out patients to appropriate avenues of intervention. The child psychiatrist's training in multiple systems makes him particularly skilled to

interface with the medical-community-school milieu both as a consultant and a resource. It is apparent that in the post-disaster period that there is an increasing widening of emotional and behavioral problems requiring the attention of child psychiatrists sensitive not only to the psychosocial matrix but also to the biological substrate and the biopsychosocial dimensions of the stress response syndromes.