2008

# Psychological Issues in Escape, Rescue, and Survival in the Wake of Disaster

Report Submitted to the National Institute of Occupational Safety and Health, Pittsburgh Research Laboratory

George S. Everly, Jr., PhD, ABPP
Paul Perrin
&
George S. Everly, III

# Contents

# Introduction

The experience of disaster appears to have become an expected aspect of life. Whether it is a natural disaster such as a hurricane or tsunami, or a human-made disaster such as terrorism, the effects can be both physically and psychological devastating. While we have made great strides in reducing the physical impact of disasters through prevention, early warning, and specialized rescue initiatives, we have only begun to understand the psychological aspects of disaster.

Indeed, the field of disaster mental health appears to have developed only recently, circa the early 1990s. The development of this field was due to a confluence of numerous factors, such as the recognition of the mental health consequences of mass disasters, an increase in global terrorism, the advent of the disaster mental health networks of the American Red Cross, the expanding presence of intervention teams from the National Organization for Victims' Assistance, the proliferation of Critical Incident Stress Management (CISM) teams affiliated with the International Critical Incident Stress Foundation, and the expansion of the Salvation Army's services to include disaster mental health and disaster spiritual health. These factors served to herald and similarly facilitate the growth and evolution of this new field. But it must be remembered that the initial development of any field is an imperfect process. As a result, it would be expected that both tactical and strategic modifications should naturally occur overtime and when confronted by challenging field applications. Responding to mass disasters such as Hurricane Andrew, Hurricane Iniki, the Mississippi River floods, the emergency mental health needs of post-war Kuwait and post-war Croatia, the Oklahoma City bombing, the terrorist attack on the USS Cole, the attacks of September 11, 2001, Hurricane Katrina in 2005, Hurricane Gustav in 2008, the shootings at Virginia Polytechnic University in 2007, and the on-going conflicts in the Middle East, the field of disaster mental health has experienced changes in both tactical implementation and strategic planning. As disasters continue to occur, we typically focus first on reducing the physical impact of the disaster and then secondarily think of the psychological adversity and morbidity that always follows in its wake.

The mining disaster is a case in point. According to the United States Mine Rescue Association (2008), the term "mine disaster" refers to mine accidents claiming five or more lives. Mine disasters were once common, now they are rare. Nevertheless, the consequences of modern mine disasters can

be as devastating now as they were in the early 1900s. The worst coal mine disaster on record, the Monongah disaster, is reported to have occurred in 1907 claiming 362 lives. This disaster compelled Congress to create the US Bureau of Mines. Table 1 reports the 3 worst mine disasters in US history.

**Table 1: The three worst coal mine disasters in U.S. history.**

**Source: United States Mine Rescue Association.**

| Year | Day | Mine | Location | Type | Deaths |
|---|---|---|---|---|---|
| 1913 | 10/22 | Stag Canon No. 2 | Dawson, New Mexico | Explosion | 263 |
| 1909 | 11/13 | Cherry Mine | Cherry, Illinois | Fire | 259 |
| 1907 | 12/06 | Monongah Nos. 6 and 8 | Monongah, West Virginia | Explosion | 362 |

Table 2 reports the coal mine disasters of this century.

**Table 2: US Coal mine disasters since 2000.**

**Source: United States Mine Rescue Association.**

| Year | Day | Mine | Location | Type | Deaths |
|---|---|---|---|---|---|
| 2007 | 08/06<br>08/16 | Crandall Canyon Mine, Genwal and Murray Energy Corporation | Huntington, Utah | Collapse | 6<br>3 |
| 2006 | 05/20 | Darby Mine No. 1, Kentucky Darby LLC | Holmes Mill, Kentucky | Explosion | 5 |
| 2006 | 01/02 | Sago Mine, International Mines Corp. | Tallmansville, West Virginia | Explosion | 12 |
| 2001 | 09/23 | No. 5 Mine, Jim Walter Resources | Tuscaloosa Co., Brookwood, Alabama | Explosion | 13 |

Close examination reveals the objective differences in the disasters reported in Tables 1 and 2 are striking and reflect the great progress made in operational and safety initiatives within the mining industry. What goes unreflected in these statistics is the psychological impact of mining disasters. We know relatively little about the psychological aspects of escape and rescue from disasters such as mining disasters compared to what we know about the physical aspects of such disasters. We know even less about the psychological "public health" consequences of a mine disaster. Arguably, a mining disaster that kills 10 can be as devastating to a community as a mining disaster that kills 50 or more, at least from psychological and sociological perspectives.

In this monograph, we will attempt to assist in the progression of our understanding of the psychology of disaster as we explore the psychological aspects of escape, rescue, and survival in the wake of disasters.

# The Psychological Impact of Crisis and Disaster

## *The Nature of Human Stress*

The term "stress" was first coined in the 1930s by Dr. Hans Selye, the greatest endocrinologist of his time, as well as the father of the "stress" concept. Selye thought of stress as "the sum total of wear and tear on the body." One of his colleagues, Dr. Paul Rosch thought of stress as "an acceleration of the aging process." Lastly, and perhaps most useful, is a definition by Noble Laureate Walter Cannon who thought of stress as "the fight or flight response." Cannon's concept is very helpful because more than other definitions, it actually tells us what the stress response was intended to do, i.e., to better prepare the organism to "fight" or to "flee" from a life threatening person or thing. An understanding of this psychophysiology is directly applicable to disaster psychology in general, and more specifically the study of escape ("flight") from disaster venues. So we shall take a closer look at this phenomenon and its related sequelae.

Stress, according to Selye in his classic book, *"The Stress of Life,"* has two primary variants: eustress and distress. Eustress is positive motivating stress. It can lead to constructive, even heroic, actions. Distress is excessive stress that may lead to dysfunction and even mental and or physical illness. Selye emphatically noted that stress could not be avoided altogether, the absence of stress, he said, is death. Obviously, then, the goal in managing stress is to experience more eustress than distress, and to prevent distress from devolving into dysfunctional behavior. Behavioral dysfunction, such as poor decision-making, mistakes, impulsive erratic behavior, behavioral paralysis (freezing), and even panic, in escape and rescue situations could lead to the further loss of property and even human lives.

### *Physiology of Stress*

For our purposes, we will focus on the "fight or flight" physiology. In order to better prepare a person to fight or flee from a threat, the body engages numerous and varied physiology mechanisms. Everly and Lating (2002) describe three primary effector systems, or axes, for the expression of the human stress response:

1. Neural Axes

a. Sympathetic nervous system

b. Parasympathetic nervous system

c. Neuromuscular nervous system

2. Neuroendocrine Axes

a. Adrenal medullary release of adrenalin into the systemic blood circulation

b. Adrenal medullary release of noradrenalin into the systemic blood circulation

3. Endocrine Axes

a. Adrenal cortical release of cortisol into the systemic circulation (cortisol is a glucocorticoid hormone that increases blood sugar while reducing immunity)

b. Adrenal cortical release of aldosterone into the systemic circulation (aldosterone is a mineralocorticoid hormone that causes sodium retention and therefore fluid retention)

c. Alterations in thyroidal hormones leading to hyperthyroidism or hypothyroidism-like reactions

d. Alterations in human growth hormone

e. Alterations in gonadotropic hormones (such alterations may affect reproductive-related behavior)

Many of these reactions are actually designed to enhance the chances of physical survival when confronted by a life-threatening situation. When these effector systems are activated for prolonged periods, or at extremely high levels, however, they can become pathogenic. Problems can arise in a host of bodily systems yielding results such:

1. Increased serum lipids
2. Increased blood pressure
3. Irregular heart rhythms
4. Vasospastic syndromes, such as migraine headaches and Raynaud's disease
5. Either increased immune responsiveness resulting in autoimmune diseases, or decreased immune responses resulting in vulnerability to infectious diseases
6. Gastrointestinal problems, such as colitis, irritable bowel syndromes, and ulcers
7. Neuromuscular syndromes such as tension headaches and muscle spasms
8. Dermatologic syndromes
9. Sexual dysfunction
10. Impulsiveness

11. Cognitive inhibition syndrome (acute "dumbing down" where people are unable to recall essential facts and are less capable of solving problems)

12. "The Crisis Triad" (Everly & Mitchell, 2008) –

a. impulsiveness

b. the inability to understand the consequences of one's actions

c. loss of hope, loss of a future orientation

## *Psychology of Stress*

We return to Hans Selye to help us better understand the psychology of stress. Selye once noted, "It is not what happens to you that matters, but how you take it." Perhaps the most acclaimed pioneer in the field of psychosomatic medicine, Stuart Wolf, once said, "It is evident from the idiosyncratic nature of interpreting experience that to understand the impact of an event, the focus of inquiry must be the individual." The philosopher Epictetus once wrote that man is disturbed, not by things, but by the views which he takes of them. What do all of these statements have in common? The answer we believe is that most of the stress in one's life comes about because of how one views the people, places, and things around them. The meanings that one assigns to things are the essential determinants of happiness, and even effectiveness as a worker, a spouse, and a parent.

This notion, that the ultimate severity of the experienced stress response is a function of the interpretation of the event, is an essential point relevant to the study of escape and rescue. If disaster victims believe their situation is hopeless, it becomes more so. They will be inclined to act impulsively or simply give up. If rescuers believe there is no chance of a successful rescue, failure becomes more likely. If, on the other hand, victims are confident in their ability to act on their own behalf (self-efficacy), if they trust their training and equipment, they are more likely to succeed (viz. Bandura, 1997).

## *Excessive Stress*

**Distress:** If one can recognize the "early warning" signs of excessive stress, one may be better prepared to manage these reactions before they become incapacitating. The signs and symptoms of distress may appear in one or more forms:

I. COGNITIVE (Thinking)

- Sensory Distortion
- Inability to Concentrate
- Difficulty in Decision Making
- Guilt
- Preoccupation (obsessions) with Event
- Confusion ("dumbing down")
- Inability to Understand Consequences of Behavior
- Hopelessness/ Helplessness

II. EMOTIONAL

- Anxiety
- Panic
- Irritability
- Anger
- Mood Swings
- Depressed mood
- Fear, Phobia, Phobic Avoidance
- Grief

III. BEHAVIORAL

- Impulsiveness
- Risk-taking
- Alcohol/ Drug Use
- Hyperstartle
- Sleep Disturbance
- Withdrawal
- Family Discord
- Crying Spells
- Hypervigilance, suspiciousness
- Giving up

IV. SPIRITUAL

- Anger at God
- Crisis of Faith

There exist several severe, incapacitating syndromes that affect survivors and rescuers, alike. They are enumerated below.

**Panic:** A panic attack is best thought of as a discrete paroxysmal interval of intense fear, psychological discomfort, and extreme psychophysiological arousal.

Psychological/behavioral symptoms of panic often include:

- the belief that one is dying
- extreme fear
- uncertainty
- hopelessness
- a sense of acute environmental constriction

Physiological symptoms can be diverse and remarkably varied between individuals. They may include, but not be limited to:

- sweating
- cardiac palpitations
- tachycardia
- bradycardia
- nausea
- vertigo
- hyperventilation

In the context of escape from life-threatening situations, panic is sometimes reported. This appears especially true if the venue is dark and it is difficult to breathe. Suc conditions are commonly associated with a loss of control.

**Depression:** Depression, in the wake of disaster, is commonly associated with loss. The loss could be the loss of a personal relationship, or the loss could be the loss of some thing considered important, eg, a job, money, status, even an opportunity. The loss could even be the loss of hope or the loss of a sense of a future. When depression becomes severe, certain rather predictable signs and symptoms emerge.

The primary psychological symptoms of clinical depression include:

- depressed mood
- an emptiness, or sense of irrevocable loss
- anhedonia
- hopelessness
- helplessness, and sometimes
- suicidal ideation.

The classic physical symptoms of depression include:

- loss of appetite
- weight loss potential
- diminished libido
- terminal insomnia (sleep maintenance insomnia)
- psychomotor retardation
- diminished energy.

***Posttraumatic Stress Disorder (PTSD)*:** This psychiatric disorder was first officially introduced in the Diagnostic and Statistical Manual of Mental Disorders, Third Edition, published by the American Psychiatric Association in 1980. The 1994 revision of that diagnostic taxonomy indicates that PTSD is a rather predictable sequelae of symptoms which lie in the wake of psychological trauma (the most severe form of human stressor). A traumatic event involves the threat of, or actual, physical injury or death (although earlier conceptualizations considered a traumatic event as anything outside the usual realm of human experience that would be markedly distressing to anyone). Its key features include three symptom clusters subsequent to the exposure to a traumatic event:

1) intrusive memories and recollections of the traumatic event in the form of persistent and distressing dreams, flashbacks, and/or intrusive thoughts/images;

2) persistent avoidance of; and withdrawal from people, places, and/or things associated with the traumatic event, as well as depressive symptoms;

3) persistent symptoms of increased arousal, such as hyperstartle reactions, irritability, angry outbursts, and sleep disturbance.

In the book, "*Personality Based Treatment of Posttraumatic Stress Disorder*," the authors George S. Everly, Jr. and Jeffrey M. Lating (2004) analyzed the posttraumatic stress disorder construct and found it to reveal two key components or constituents:

1) neurologic hypersensitivity and

2) psychologic hypersensitivity.

The neurologic hypersensitivity is thought to consist of a lowered depolarization threshold deep within the center of the brain, an area known as the amygdaloid posterior hypothalamic efferent pathways of the limbic system. This functional hypersensitivity, consisting of a functionally lowered depolarization threshold, is thought to give rise to a potential over-reactive cascade such as behavioral impulsivity, irritability, and propensity for violence.

The psychologic hypersensitivity is thought to arise from a violation of some deeply held belief. This belief is referred to as a worldview. Thus, a traumatic event, according to this perspective, is predicated upon some situation that violates a deeply-held and important worldview. There appear to be five core beliefs that when violated give rise to posttraumatic stress reactions.

1) Violation of the belief that the world is "just" or "fair."

2) Violation of the belief that one is a basically competent and "good" person

3) Abandonment, betrayal, violation of trust. Betrayal by a parent, family member, trusted friend, or even a spouse.

4) Violation of a sense of safety, universally speaking. Something may occur that makes the world seem like an unsafe place.

5) Violation of some sense of coherency, e.g., religion, spirituality, science, etc. Some traumata may actually take away the psychological "glue" that holds the world together from the context of making sense (sometimes considered an explanatory worldview).

Violations of core beliefs such as those just enumerated can result in the experience of posttraumatic stress reactions. If these reactions interfere with one's ability to function on a daily basis (at work and/or at home), then we refer to it as a stress disorder.

In the context of disaster, certain factors may contribute to PTSD:

1)The lack of adequate warning

2)The belief that the disaster could have been prevented

3)The belief that the disaster was a result of human error

4)The belief that the disaster was a result of efforts to save money at the cost of human welfare

5)The belief that there was an inadequate rescue initiative

***Compassion* Fatigue:** Dr. Charles Figley has observed that it may be possible to develop a form of PTSD simply by helping, or rescuing, those who have been traumatized. Compassion fatigue—or secondary traumatic stress disorder—is the natural consequence of stress resulting from caring for and helping traumatized or people, or even animals. This form of stress occurs when professionals who become so overwhelmed that they themselves experience feelings of fear, pain, and suffering. They may suffer from reactions similar to the form of PTSD we just discussed, such as, intrusive thoughts, nightmares, loss of energy, and perception of threats at home or at work.

## A Review of Empirical Investigations on the Mental Health Consequences of Crisis and Disaster

### *Primary Victims / Survivors*

Hurricane Katrina was the most costly disaster in modern American history. It's effects were wide-spread physically, economically, and psychologically. In an investigation of 1077 displaced or greatly affected households, more than half of those sampled at 6-12 months and later at 23 months follow-up reported significant mental health distress. The best predictors of poor mental health included the number of children in a household, fatalistic attitudes, and poor self-efficacy (low self-confidence regarding recovery). Serving as a predictor of resiliency, informal social support networks were associated with significantly better mental health status. Housing and economic circumstances were not independently associated with poorer mental health.

Subsequent to the September 11, 2001, terrorist attacks on the World Trade Center, during the period from October 11$^{th}$ through December, 2001, the CDC Behavioral Risk Factor Surveillance System (BRFSS) initiative sampled 3,512 adult residents of Connecticut, New Jersey, and New York via a random

digit dialed telephonic survey. The "results of the survey suggest a widespread psychological and emotional impact in all segments of the three states' populations" (CDC, 2002, p.784) Seventy-five percent of respondents reported having problems attributed to the attacks: 48% of respondents reported that they experienced anger after the attacks, 37.5% reported worry, 23.9 reported nervousness, and 14.2% reported sleep disturbance. About 12% of respondents reported receiving help, but the majority of the help received was from family members and friends.

Schuster, Stein, et al. (2001) using random-digit dialing three to five days after the terrorist attacks of September 11, 2001, performed an assessment of mental health effects for a nationally representative sample of 569 adults within the United States. Results indicate that 44% of the adults interviewed reported one or more substantial stress symptoms; 91% percent had one or more symptoms to at least some degree. Furthermore, 35% of children had one or more stress symptoms. **Coping strategies included talking with others (98 percent), religion (90 percent), group activities (60 percent), and making donations (36 percent).** Interestingly, 85% of parents reported that they or other adults in the household had conversation with their children about the attacks lasting for an hour or more.

Schlenger, Caddell, et al. (2002) assessed psychological symptomatology in the United States following the terrorist attacks of September 11, 2001. A web-based cross-sectional national sample of 2273 adults using the Posttraumatic Stress Disorder (PTSD) Checklist and the Brief Symptom Inventory was conducted 1 to 2 months following the attacks. There were oversamples of the New York, NY, and Washington, DC, metropolitan areas. The self-reported prevalence of probable PTSD was significantly higher in the New York City metropolitan area (11.2%) than in Washington, DC (2.7%), other major metropolitan areas (3.6%), and the rest of the country (4.0%). In multivariate analyses, sex, age, direct exposure, and the amount of time spent viewing TV coverage of the attacks were associated with PTSD. Furthermore, sex, the number of hours of television coverage viewed, and an index of the content of that coverage were associated with more general distress.

In an interesting study of the effects of proximity, Galea, Ahern, et al. (2002) assessed the prevalence of acute post-traumatic stress disorder (PTSD) and depression among residents of Manhattan five to eight weeks after the terrorist attacks of September 11th Among those interviewed, 7.5% reported symptoms consistent with a diagnosis of current PTSD related to the attacks and 9.7% reported symptoms consistent with depression occurring within the previous 30 days. Among

respondents who lived closer to Ground Zero, south of Canal, the prevalence of PTSD was 20% **,** thus physical proximity to the disaster venue was a predictor of distress.

In an investigation by Brackbill & Thorpe (2006), survivors of collapsed or damaged buildings from the attack on the World Trade Center (WTC) were asked to report on health events they had experienced in the wake of the disaster. In a self-reported assessment of mental health, 65% of building survivors reported experiencing a new onset of depression, anxiety, or emotional problems after September 11; furthermore, 11% of survivors were determined to have a probable severe psychological disorder at the time of the interview. It is important to note that presence in the dust and debris cloud following the building collapses had the strongest association with self-reported new depression, anxiety, or emotional problems (68.5% versus 58.5%; OR=1.4; $p<0.05$) and probable SPD (13.6% versus 5.8%; AOR = 2.2; $p<0.05$). In addition, survivors of collapsed buildings were more likely to report new depression, anxiety, or other emotional problems (66.7% versus 61.7%; AOR = 1.5; $p<0.05$) and probable SPD (11.8% versus 9.0%; AOR = 1.5; $p<0.05$) than were survivors of merely damaged buildings. This in spite of the fact that exposure to traumatic events (other than building collapse) were comparable for the two groups. Time of evacuation was not associated with either mental health outcome. This high prevalence of probable SPD among building survivors was nearly twice the prevalence of SPD documented in New York City adults during a similar period.

Stein, et al. (2004) conducted a longitudinal study of the psychological consequences of the September 11th terrorist attacks. This investigation was a national re-survey of 560 adults conducted November, 2001. The investigation yielded a 71% response rate with the following findings:

16%- adults reported 1 or more symptoms of significant distress…of those…

65% -adults with persistent distress reported accomplishing less at work (33% overall);
75% - adults of turned to prayer, spirituality (58% overall), while

43%- adults reported using alcohol or other chemicals to reduce distress(17% overall).

Boscarino, Galea, et al. (2002) assessed mental health utilization in Manhattan following the September 11th terrorist attacks using a random-digit-dial telephone survey 5 to 8 weeks post event. Of a total of 988 adults, 16.9% reported using mental health services 30 days before the attacks and 19.4% post-attacks (a 2.5% increase). While a statistically significant increase in pre- vs. post-disaster utilization of mental health services was found among the general population in Manhattan the increase

was not “substantial,” except among those who had a peri-event panic attack, among those exposed to previous trauma and more acute stressors, among women, and among those in the 45-65 years of age.

Boscarino, Galea, et al. (2003) assessed psychiatric medication use in 1008 New York residents in October 2001, subsequent to the September 11th terrorist attacks. Telephone survey methods were used. The prevalence of psychiatric medication use 30 days before the disaster was 8.9% compared to 11.6% 30 days after, a 2.7% increase.

Similar findings were revealed by Hoge, Pavlin, et al. (2002) in their investigation of health care use after the September 11 terrorist attacks. Using the Electronic Surveillance System for the Early Notification of Community-based Epidemics (ESSENCE) data base the authors conducted a behavioral health surveillance among military health system beneficiaries in the Washington, D.C. area**.** There was no significant increase in the total number of visits to behavioral health clinics. However, there were significant increases in the number of visits for anxiety disorder and acute stress reactions in children and adjustment reactions in adults. These data seem in concert with those of Boscarino, Galea, et al. (2002) suggesting a lower than anticipated “surge” effect for mental health issues.

In a study designed specifically to examine the psychological contagion phenomenon, Lating, Sherman, Lowry, Everly, and Peragine (2004) assessed psychological reactions and functional coping responses of American Airlines (AA) east coast and west coast flight attendants after the attacks of September 11. In an effort to assess functioning of AA flight attendants, demographics and standardized questionnaires were received from more than 2,000 flight attendants from bases throughout the country. The returned surveys were separated into east coast flight crews (513 from Boston, New York, and Washington, DC) and west coast flight crews (353 from Los Angeles and San Francisco) in order to assess for similarities and differences in emotional reactions and functioning. Despite demographic differences between the flight crews, most notably that the east coast flight crews knew significantly more people who perished as a result of September 11 or the subsequent crash of Flight 587 than the west coast flight crews (69% vs. 30%, respectively), there were no statistically significant differences between them regarding amount of probable PTSD (19.1% and 18.3%). These finding underscore the importance of perceived vulnerability as a predictor of posttraumatic distress.

In a final investigation of the aftermath of the attacks on the World Trade Center (WTC), a comprehensive screening program of 1,138 rescue and recovery workers and volunteers was conducted by the Mount Sinai School of Medicine during July 16--December 31, 2002 in order to evaluate physical

and mental health (CDC, 2004). On the basis of standardized screening questionnaires, 51% of participants met threshold criteria for a clinical mental health evaluation. Approximately 20% of participants reported symptoms consistent with posttraumatic stress disorder (PTSD). However, application of the diagnostic criteria of symptom endorsement and impairment reduced the prevalence of PTSD from 20% to 13%. Of the 1,138 participants, only 3% reported accessing mental health services before participating in the screening.

Subsequent to another terrorist attack on American soil, North, et al. (1999) assessed the prevalence of psychiatric disorders amongst a cohort of 255 survivors of the Oklahoma City bombing at 6 months post event. A sample of 187 was ultimately interviewed 6 month post disaster in order to gain the reported data. Results indicated that 45% of the subjects possessed a psychiatric disorder (34.3 % PTSD, 22.5% depression, 6.6% panic 4.4% GAD, 21% drug or alcohol use disorder). The authors report the onset of symptoms was rapid (76% reporting same day onset). Ninety-four percent of the subjects who met the avoidance and numbing criteria ultimately developed PTSD, while the intrusive ideation and arousal symptoms were nearly universal.

Members of the Aum Shinrikyo cult released sarin in a Tokyo subway during rush hour in March 1995. More specifically, cult members placed sealed plastic bags of diluted sarin onto the subway trains, and then pierced the bags with sharpened umbrella tips before leaving the train (Bowler, Murai, & True, 2001). Sarin, an extremely toxic clear, colorless substance that disables the nervous system, and was responsible for the death of 12 people in this attack. Ohbu and colleagues (1997), who studied 641 patients on the day of the disaster, reported that 531 patients (83%) were treated in the outpatient department and released after 6 hours of observation. Within weeks of the attacks, 60% of surveyed victims had symptoms consistent with PTSD (nightmares, flashbacks, intrusion, and avoidance) (Asukai, 1999), and fours years after the attacks, 57% of victims who responded to a survey continued to have symptoms of depression, flashbacks, nightmares, and panic when boarding trains (Watts, 1999).

Between January 18th and February 28, 1991, 39 SCUD missiles fell upon Israel within the context of the Gulf War. Although military strikes, these attacks were clearly acts of terrorism. The attacks caused 2 deaths and 232 patients were admitted to emergency rooms for injuries directly related to the explosions. It was reported that 1059 individuals presented for emergency medical care. Of that number, 78% presented with psychological/ behavioral problems--544 cases (51%) presented with acute anxiety (Karsenty, Shemer, et al., 1991).

Shimamiya, Terada, et al. (2004) conducted an investigation of the effects of confinement on immunologic function. In their study, 10 adult males participated in the 10-day confinement study. Blood samples taken before, during, and after the confinement demonstrated that the percentage of lymphocytes decreased during the period of confinement, then increased during the post-confinement period. A face scale showed that the subjects' moods improved during the post-confinement period. The authors concluded that stress due to confinement changes the distribution of immune cells and mood.

Survivors of the *Estonia* cruise ship disaster were surveyed by Eriksson and Lundin (1996) to assess the short-term psychological impact of the incident. Because the *Estonia* sank in less than 30 minutes, only those able to quickly escape on life rafts and withstand three to five hours of exposure in ice cold waters survived the disaster. Respondents were asked to complete surveys that targeted the level of psychological coherence during the disaster and the resulting post-traumatic stress. The study used the Sense of Coherence (SoC) and the DSM-IV's list of dissociative symptoms of Acute Stress Disorder to assess lowered coherence during the incident. To assess post-incident stress, the study employed the Post Traumatic Symptom Scale (PTSS-10) and the Impact of Events Scale (IES**).** The surveys revealed an inverse correlation with SoC scores and reports of dissociative symptoms on the PTSS-10 and IES. Respondents reporting a higher level of coherence and less dissociative symptoms during the disaster scored lower on the PTSS-10 and IES. The study thus established a significant link between dissociation / coherence and PTSD.

Birmes, P., Brunet, A., et al. (2005) investigated the symptoms of peritraumatic and acute traumatic stress among victims of an industrial disaster. Two hundred survivors of a factory explosion in Toulouse, France were surveyed to examine the correlation between traumatic exposure, peritraumatic distress, and acute stress disorder symptoms as they 1) relate to each other and 2) in predicting post-traumatic stress disorder. The industrial accident caused 30 deaths and over 2,000 injuries to people more than a kilometer away. A hierarchical multiple regression revealed that the three predictors each accounted for a unique percentage of the variance explaining PTSD. These results confirmed that none of the predictors act as a proxy for the others. Instead, they individually account for a unique portion of the variance and thus can independently serve to identify individuals most at risk for PTSD.

In a study reported by Unaiza, Sehar, et al. (2007), seventy five women that survived a major earthquake (7.2 on the Rictor scale) in Pakistan were interviewed at a survivor's camp to determine their experience and resulting stress disorders. Using regression analysis, the authors explored the

relationship between certain peritraumatic stressors and PTSD. The findings suggested that being trapped under rubble is a significant predictor of later disorders.

An insightful paper by Roy, Shah, et al. (2002) provides more insight into the effects of confinement/ entrapment through a case study of the aftermath of an earthquake. Of interest is the discussion regarding the high number of building collapses and ensuing number of people trapped. The authors note that entrapment was the single most significant factor associated with death or injury, and that the victims probably suffered a protracted death. Furthermore, the major problems with extrication of trapped victims were a lack of adequate equipment and trained rescue personnel. Penetrating and cutting through columns and beams of the precast-concrete of buildings proved to be the major obstacle in the local rescue effort, as there was not sufficient machinery available in the area.

In an interesting paper by Sharma and Rees (2007) some preliminary evidence is presented that suggests that miners and their families may be at increased mental health risk to begin with at baseline. Because often mines are located in remote locations and towns are built solely for the miners and their families, mine workers and their families may feel isolation from friends and relatives and experience limited sociologic resources and opportunities. A large number of women in new and remote mining towns suffer from neurotic problems. Work schedules and preponderance of men in mining jobs help promote a patriarchal culture within the community and the family, thereby potentially marginalizing women to a secondary status. Limited opportunities and resources within the community may serve to restrict women's domestic lives; while atypical work schedules associated with mining employment could negatively impact on the relationship well-being of couples and families.

Basoglu, Salcioglu, et al. (2002). examined the rates of posttraumatic stress disorder (PTSD) and depression and associated risk factors in earthquake survivors in Turkey. The strongest predictors of traumatic stress symptoms were more intense fear during the earthquake, female gender, having been trapped under rubble, death of a family member, past psychiatric illness, having participated in rescue work, and lower education.

Salcioglu, Basoglu, et al. (2003) conducted a similar study to the one above, but this one also looked at depression. Again, being trapped emerged as a predictor of experiencing PTSD; it did not, however, predict major depressive disorder. Qualitative research from the authors revealed that trying to help people trapped in the rubble was a traumatic experience for many, as it evoked intense anxiety, feelings of helplessness, desperation, anger, self-blame, and guilt arising from the inability to rescue most of the people. This should be a serious consideration in the selection and training of peer response rescue teams. Some people reported being trapped under rubble for as long as 10 days. Some survivors

were trapped under the rubble with their close friends, and in some cases, they witnessed their severe injuries and slow death. Others spent days under the rubble without water, and there were reports of people who had to drink their urine to survive. For some survivors, the situation was so extreme that they considered suicide, and some even attempted it.

An investigation by Stevens, Calitz, et al. (2006) sought to determine the relationship between trauma of "earth fall" mining accidents. This is an important study, because the groups who developed PTSD were compared with those who did not develop PTSD in regards to various aspects of the trauma they experienced**.** Factors associated with the development of PTSD were: victims having felt their life was in danger, being pinned by rocks, experiencing the event as unexpected, absence of ventilation following incident, absence of light, suffocation, a blow to the head, unconsciousness, feeling horror or intense fear and helplessness, not returning to work, seeing colleagues flee from the scene without helping with rescue, hearing colleagues cry. Interestingly, the prevalence of seeing colleagues pinned by rocks or injured did not differ significantly between the groups. Subjects who had experienced a previous traumatic event were also more likely to develop PTSD. It is theorized, and supported by previously reviewed research, that being pinned with subsequent darkness is particularly predictive of posttraumatic morbidity because it involves all the senses; the more senses involved in the trauma, the higher the likelihood of developing symptoms. The author recommends that those miners who have gone through some of these experiences, particularly being pinned, lack of light, and suffocation, should all be referred to Critical Incident Stress Debriefing (CISD) as soon as the event is over.

Noting the previous recommendation relevant to the highly confusing issue of "debriefing," the NIMH (2002) report on mental health and mass violence contains various research appendia that may provide a useful review for the interested readers. Within that document Tables 2 and 3 report on self-described "debriefing" (early psychological intervention) research. In the aggregate, the results seem equivocal. However, closer scrutiny reveals the following details:

1) A review of seventeen studies in the aggregate (sixteen contain sufficient information to assess applicability).

2) Of the sixteen, nine utilized a group "debriefing" intervention format, seven utilized an individualized, one-on-one intervention format.

3) The nine group intervention studies were conducted using victims of mass disaster, war, and robbery.

4) The seven individual intervention studies were conducted using medical and surgical patients.

5) Regarding outcome, seven of the nine group intervention studies conducted with disaster and violence victims yielded evidence supportive of the clinical effectiveness of group crisis intervention; one study yielded non-significant results; one study yielded evidence suggesting the intervention was associated with a worsening of psychological symptoms.

6) Regarding outcome, four of the seven individual intervention studies conducted with medical and surgical patients yielded non-significant results; three of the seven studies yielded data suggesting that intervention was associated with a worsening of psychological symptoms (although each of these studies was contaminated with challenges to internal validity in the form of non-equivalent baseline conditions). Interestingly, these studies, nevertheless, were constituents in Stapleton's (2006) medical crisis intervention meta-analysis, the results of which were generally supportive of the clinical effectiveness of individual crisis intervention with medical and surgical patients.

## *Rescue and Recovery Personnel*

Relatively few studies examine psychological reactions to traumatic events in individuals trained to respond to potential crises and disasters that may be associated with their occupation. U.S. Navy personnel assigned to ships routinely receive specialized disaster response training. Those who work in the submarine service are screened for potential psychological distress, are extensively trained in the operating systems of their ships, and routinely practice responses to potential disasters specific to their shipboard environment. Research with this population is limited, however. This study conducted by Berg, Grieger, & Spira (2005) assessed the stress reactions of a submarine crew forced to abandon their submarine. The 22 crew members were surveyed 7 months after the incident regarding exposures, initial psychological reactions, peritraumatic dissociation, subsequent life events, current safety appraisal, and current symptoms of posttraumatic stress disorder (PTSD) and depression. At 7 months, 9.1% met criteria for PTSD and none met criteria for depression. Increased PTSD symptoms were associated with greater peritraumatic dissociation and initial emotional response. "The relatively low degree of peritraumatic dissociation is consistent with previous studies which showed that more highly screened, better trained, and experienced military members have lower levels of dissociative symptoms than age-matched peers with less experience and training when exposed to the same high stress environment. The fact that no subjects endorsed a sense of disorientation despite the flooding, fires,

toxic fumes, and fear of potential death indicates the value of extensive, platform-specific disaster training" (p. 44).

It has been postulated that rescue and recovery workers who work around and with deceased victims are at increased risk of PTSD. A study by Ursano, et al., (1999) sought to elucidate the underlying mechanisms. Identification with the deceased is one such postulated mechanism. The present study assessed 54 volunteer disaster workers who worked with the dead following an explosion on the USS Iowa at1, 4, and 13 months post disaster. This study investigated three types of identification in this group of disaster personnel: identification with the deceased as oneself, identification with the deceased as a friend, and identification with the deceased as a family member. Results of the study indicated that "disaster workers who reported identifying with the deceased as a friend were more likely than those who did not to have PTSD, more intrusive and avoidant symptoms, and greater levels of other posttraumatic symptoms including somatization. Disaster workers who reported identification with the deceased as a family member had greater intrusive symptoms 1 month after the disaster than those who did not. There were no differences between those who did and did not identify with the deceased as self. Health care utilization was not associated with identification. Identification with the deceased is a risk factor for PTSD and posttraumatic symptoms in disaster workers exposed to the dead. Identification with the dead as a friend is specifically associated with higher risk for these workers" (Ursano, et al., 1999, p. 353).

In an assessment of emergency workers conducted 34 months after a terrorist attack in Oklahoma City, North, Tivis, et al. (2002) used the Diagnostic Interview Schedule to retrospectively assess probable posttraumatic stress disorder subsequent to the Oklahoma City bombing. The prevalence of probable posttraumatic stress disorder was found to be 13% in this male population compared to a prevalence of 23% found in a sample of male primary victims.

Fullerton et al. (2004) compared disaster workers exposed to work after an airport disaster to unexposed disaster workers who were matched on socioeconomic status, geography and urban or rural location. The two groups were alike on previous exposure to disaster work. The rates of PTSD was 13% amongst the exposed group at 13 months after the airport disaster. After adjustment for level of previous disaster exposure, the odds of PTSD were 6.34 (95% CI 1.7-23.61) comparing the exposed to unexposed disaster workers. Early dissociative symptoms, acute stress disorder and depression were

also predictive of later PTSD at 13 months, and among the exposed disaster workers, assisting survivors was associated with greater 2.98 (95% CI 1.04-8.51) odds of PTSD.

In the Fall of 1996 (4.5 years after the Iraqi withdrawal from Kuwait) a random survey of 2,387 Kuwati firefighters was conducted in an effort to assess the prevalence of posttraumatic stress disorder (Al-Naser & Everly, 1999). The survey yielded 108 male respondents. Using the Impact of Events Scale to assess probable posttraumatic stress disorder, 18.5% of the sample endorsed symptoms consistent with PTSD, there was no difference in prevalence rate between those firefighters who were in Kuwait during the Iraqi invasion and those firefighters who were not in Kuwait during the invasion suggesting a vicarious trauma or contagion effect.

Paton (1994) investigated stressors that effected rescue personnel. This study compared the propensity of a group of firefighters with a group of predominantly non-emergency service volunteers (but who were specifically trained for disaster relief work) to define event characteristics during a response to the 1988 Armenian earthquake as stressors. Interestingly, the study found that the firefighter group was significantly more likely to perceive staff problems, role uncertainty, leadership problems, access difficulties, not being able to do the job, inactivity, being pushed to the limit, and a lack of support from other team members as stressors. These results suggest that the even though such workers are highly trained and experienced, this did not prepare them for major disaster work, in contrast to the study by Berg, Grieger, & Spira (2005). The repercussions of such were that 3 months later, the firefighters presented with much higher Impact of Event Scores (i.e., intrusion and avoidance) than their volunteer counterparts.

Regehr, C., Goldberg, G., & Hughes, J. (2002) reported a mixed methods study (quantitative and qualitative data) on vicarious trauma among paramedics. Data suggest that for the most part, emergency workers have learned to deal with traumatic events and take them in stride. At times, however, certain circumstances lead workers to develop an emotional connection with the victim or his or her family. The authors found that the most troubling instances for paramedics involved not multiple deaths in a dramatic incident, but rather the death or injury of someone whom the worker contextualized in relationship to others; (i.e., an individual who died alone, without the support of others; a child who did not benefit from a loving, caring environment; a family devastated by loss; or an individual so alienated that he took his own life). By contextualizing the individual, the paramedic develops an emotional connection to the individual or the bereaved family members and moves beyond

a cognitive understanding of the loss or suffering to experiencing emotional empathy in these situations. When this occurs, paramedics report increased symptoms of traumatic stress. Paramedics described making conscious attempts during a traumatic event to shut out the emotional reactions of family members of the victim and visualizing the next technical step to be accomplished (staying task oriented). They also discussed the need to shut down their own emotions. After the event, an additional cognitive coping strategy involved reviewing the event from a technical operations standpoint and identifying learning opportunities (ways to improve performance in subsequent calls). It should be noted that although such a cognitive distancing strategy may be acutely protective, it may also have long-term negative effects in terms of interpersonal relationships on and off the job.

Murphy, Johnson, & Beaton (2004) conducted a longitudinal prospective study analyzed fire fighter's appraisals of job concerns, threats to personal well-being, and social support six months prior to "9/11" and vicarious exposure to the terrorist attacks one week following "9/11". The results somewhat counter-intuitively showed that vicarious exposure to the terrorist attacks of "9/11" resulted in increased job concerns and personal threats to well-being when compared with direct exposure to day-to-day responses to emergency trauma. The three job concern variables that showed the most significant differences in mean scores and p values after "9/11" were worries about personal competence in handling mass casualty runs, exposure to increased personal risk due to job, and concerns about personal injury/disability/death due to work. These results suggest that even though fire fighters have personal experience with injury and death in the day-to-day context of their work, large-scale crises may exceed their coping skills. Television coverage may have resulted in fire fighters' personalizing the event, particularly since many injuries and deaths at the World Trade Center were among fire fighters.

In order to assess the effects of international aid work upon humanitarian support personnel, Eriksson, Kemp, et al. (2001) employed self-report survey methodology. Surveys were administered to 113 recently returned staff from five humanitarian aid agencies to determine factors that predicted severity of the resulting PTSD. All of the respondents reported high rates of direct and indirect exposure to life-threatening events, while 30% described significant symptoms of PTSD. The results indicated that the risk of PTSD is significantly lessened when the exposure to life threatening situations, whether direct or vicarious, is accompanied by high perceived social support.

Guo, Chen, et al. (2004) conducted a survey wherein professional and non-professional rescue workers in the Chi-Chi Earthquake in Taiwan were queried to investigate the effect of professional training on the prevalence of PTSD among rescue workers. Two hundred and fifty two workers were surveyed using the Chinese versions of the Davidson Trauma Scale (DTS-C) and SPAN (SPAN-C). Consistent with previous findings, the study found a much higher prevalence of PTSD among non-professional workers. Furthermore, comparing the three subscales of DTS-C, the only distinguishing scale was numbness / avoidance, which was much higher among non-professionals than professionals compared to the arousal and re-experiencing scales.

In a very interesting review, Sabin-Farrell, R., & Turpin, G. (2003) examined the literature for definitions of vicarious trauma (VT), instruments to measure it, and data on its effects (with the findings, sample size, and measures used for each article uncovered in the literature). The most common measures of PTSD symptoms that have been used in VT research are the Impact of Event Scale (IES) and the Trauma Symptom Checklist-40. Other instruments that have been used include the Symptom Checklist-90-Revised (SCL-90-R), the Brief Symptom Inventory (BSI), the Traumatic Stress Institute (TSI) Belief Scale, and the Compassion Fatigue Self-Test for Practitioners (CFST). While the authors acknowledge that for some there are identifiable effects of trauma work that are detrimental to their mental health and beliefs, they ultimately conclude that research evidence for the existence of VT is inconsistent and inconclusive. They add that it is too early to conclude whether it is useful to define the secondary exposure to trauma (trauma-related work) that may result in emotional distress as VT, or simply to consider it as a normal consequence of demanding health care roles. However, the authors are quick to call that this is an area that warrants further investigation. They particularly call for improved methodological rigor by attending to the construct validity of VT. It may be that clinically, this is more of a semantic issue than a functional one. If indeed there is psychological morbidity associated with exposure to traumatic events, including disasters, other than being a primary direct impact victim, it seems there remains a compelling reason to act in a manner so as to protect those in that elevated risk condition.

## "Resistance, Resilience, and Recovery" as a Strategic and Integrative Intervention Paradigm

This monograph was prefaced by a simple assertion, ie, we know far more about the operational aspects of disaster prevention and intervention than we do about the psychological issues associated with disasters and disaster intervention. In this section we shall review an integrative paradigm that may serve to assist in further clarification and program development.

Psychological intervention subsequent to crises and even mass disasters has historically been characterized by reactive, event-centered practices. The crisis intervention movement itself has been a movement often conceptualized as an event-driven process with little appreciation for the variability inherent in the temporal trajectory of the human response to disasters. Univariate, or limited scope, crisis intervention models originated from community mental health initiatives (Parad, 1966; Parad & Parad, 1968; Langsley, Machotka, & Flomenhaft, 1971; Decker & Stubblebine, 1972), grief counseling (Lindemann, 1944), and community psychiatry movements (Caplan, 1961, 1964), as well as the "forward psychiatry" initiatives of the great world wars (Salmon, 1919; Artiss, 1963; Kardiner and Spiegel, 1947).

More recent recommendations, however, have called for crisis intervention and disaster mental health services to be delivered in an integrated multi-component format (Raphael, 1986, Everly & Mitchell, 1999, 2008; Ritchie, Friedman, Watson, Ursano, Wessely, & Flynn, 2004; US Dept of Heath & Human Services, 2004; Sheehan, Everly, & Langlieb, 2004; Ruzek, Young, Cordova, Flynn, 2004; Paul & Blum, 2005; Boscarino, Adams, Foa, Landrigan, 2006).

In this section, we shall examine an overarching strategic framework for the provision of crisis and disaster mental health services. Such an approach must necessarily consist of an integrated, multi-component continuum of care. As the standard of care for the practice of health services in physical medicine employs an integrated continuum of care, so too must the standard of care in disaster mental health be an integrated multi-component continuum of care.

## *Historical Foundations*

To begin, we must assert that the field of disaster mental health is a relatively new field, largely emerging in the 1990s. Its roots, nevertheless, can be found in the field of crisis intervention and emergency mental healthcare. Let review so basic terms.

A psychological crisis may be thought of as an acute decompensation in psychological and/or behavioral functioning. Its defining characteristic is functional impairment.

Crisis intervention is the natural corollary of the crisis. Crisis intervention may be thought of as urgent psychological/behavioral care designed to first stabilize, then reduce symptoms of distress/ dysfunction so as to achieve a state of adaptive functioning; or, to facilitate access to continued care, when necessary. The process of "treatment" as well as the expectation of "cure" are inappropriate to crisis intervention and disaster mental health programs.

Unfortunately, crisis intervention is sometimes confused with counseling and psychotherapy. The P-I-E principles, derived and currently adapted from military psychiatry (Salmon, 1919; Artiss, 1963), may assist in making a differentiation. P-I-E represents the defining characteristics of crisis intervention and acute disaster mental health:

**P - proximity** (outreach; the provision of services wherever needed),

**I - immediacy** (urgency; rapid intervention as close to the emergence of psychological decompensation and adverse reactions as possible),

**E - expectancy** (the view that the current state of disequilibrium or decompensation is a result of a environmental events as opposed to latent mental illness; therefore, the goal of intervention is to address that current reaction, not "cure" any pre-existing psychiatric syndrome, even if it is present).

The P-I-E principles have been investigated. In a 1982 study of Israeli soldiers, Solomon and Benbenishty (1986) investigated the core crisis intervention principles of proximity, immediacy, and expectancy. Their investigation revealed that all three were positively correlated with returning to the fighting unit. Further analyses revealed that immediacy and expectancy were correlated inversely with the development of posttraumatic stress disorder. In support of the integrated multi-factorial approach

to crisis response, the authors conclude, “The effects of proximity, immediacy, and expectancy seem to be interrelated . . . the findings of this study clearly demonstrate the cumulative effect of implementing all three treatment principles” (Solomon and Benbenishty, 1986, p. 616). Most importantly, however, are the implications of the 20-year longitudinal follow-up by Solomon, et al. (Solomon, et al., 2005). The study evaluated the long-term effectiveness of the frontline interventions provided to combat stress reaction casualties. Using a longitudinal quasi-experimental design, the same combat stress reaction casualties of the 1982 Lebanon War who received frontline treatment (N=79), were compared to matched combat stress reaction casualties who did not receive frontline treatment (N=156), and other soldiers who did not experience combat stress reaction (N=194). Twenty years after the war, traumatized soldiers who received frontline crisis intervention, following the core principles of proximity, immediacy, expectancy, had lower rates of posttraumatic and psychiatric symptoms and reported better social functioning than similarly exposed soldiers who did not receive frontline intervention. The cumulative effect of the core crisis principles was documented in that the more principles applied, the stronger the effect. The authors conclude, “Frontline treatment is associated with improved outcomes even two decades after its application. This treatment may also be effective for nonmilitary precursors of posttraumatic stress disorder” (p. 2309).

Later, in the evolution of crisis intervention, the characteristics **of** simplicity, brevity, and pragmatism were added.

In sum, perhaps a useful way of conceptualizing crisis intervention is in the context of medical therapeutics. “As physical first aid is to surgery, crisis intervention is to psychotherapy.” Crisis intervention is sometimes thought of as “emotional first-aid” (Neil, Oney, DiFonso, Thacker, and Reichart, 1974).

As mentioned earlier, recent recommendations have called for crisis intervention and disaster mental health services to be delivered in an integrated multi-component format structured within a continuum of care. The development of an integrated, multi-component approach to critical incidents such as disasters is not without precedent. Although recognizing a clinical difference, there remains a historical parallel in the field of psychotherapy.

Historically, the field of psychotherapy appeared to evolve through three distinct phases: the univariate, the eclectic, and the integrative. The early years of psychotherapy were characterized by the practice of a multitude of diverse, univariate psychotherapeutic practices based upon singular theoretical orientations of psychopathology and healing, such as behavior therapy, person-centered psychotherapy, and psychoanalysis, to name a few. Rivalry among psychotherapeutic orientations has a long and undistinguished history.

Later, there seemed to be recognition that the aforementioned schools and their psychotherapeutic practices could co-exist, but not coincidentally. The eclectic phase saw the implementation of a singular intervention chosen from a collection of possible interventions, based upon a multitude of theoretical mechanisms of action. The selection of the intervention mechanism was based upon the clinician's assessment as to which intervention best suited the needs of the patient at that point in time.

Finally, the integrative approach to psychotherapy emerged. Integrative psychotherapy may be thought of as the implementation of an integrated array of psychotherapeutic interventions concurrently combined and catalytically sequenced in such a manner as to best respond to the unique needs, or "idiographic heterogeneity," of a given patient or group of patients. According to Millon, Grossman, Meagher, Millon and Everly (1999), "The palette of methods and techniques available to the therapist must be commensurate with the idiographic heterogeneity of the patient for whom the methods and techniques are intended" (1999, p. 145). Ultimately, such an approach to treatment formulation would lead the therapist to choose the best therapeutic intervention, or set of therapeutic interventions, to meet the then current needs of the patient, at that present point in time.

The field of crisis intervention and disaster mental health response has evolved in a remarkably parallel fashion, progressing from univariate, to eclectic, to an integrative approach. The early years of critical incident response were characterized by the practice of a multitude of diverse, univariate intervention practices based upon singular theoretical orientations, such as behavioral crisis intervention, Critical Incident Stress Debriefing (CISD), multi-stressor debriefing, cognitive behavioral crisis intervention, specific models developed by the American Red Cross, the National Organization for Victims Assistance, the forward psychiatry military models emphasizing the PIE (proximity, immediacy, expectancy) construct, Roberts' crisis intervention approach, to name a few. Unfortunately, rivalry among orientations has a long and undistinguished history.

Later, there seemed to be some minimal recognition that the aforementioned orientations might co-exist, or exist with population specificity, but not coincidentally. This eclectic phase saw the implementation of a singular intervention chosen from a collection of possible interventions, based upon a multitude of theoretical mechanisms of action.

Finally, the integrative approach to critical incident response emerged. Integrative psychological crisis intervention and disaster mental health response may be thought of as the implementation of an

integrated array of critical incident interventions concurrently combined and catalytically sequenced in such a manner as to best respond to the unique needs, or "idiographic heterogeneity," of a given individual or population (Everly & Mitchell, 2008).

As Paul (1966), Millon, Grossman, Meagher, Millon and Everly (1999), and others urged an integrative approach to psychotherapy, Raphael (1986), Everly & Mitchell (1999), Ritchie, Friedman, Watson, Ursano, Wessely, & Flynn (2004), Ruzek, Young, Cordova, Flynn (2004), Everly & Langlieb (2003), Flannery & Everly (2004), and Watson & Shalev, (2005) urged an integrative approach to psychological crisis and disaster mental health intervention. As adapted from Millon, Grossman, Meagher, Millon and Everly (1999), "The palette of methods and techniques available to the [interventionist] must be commensurate with the idiographic heterogeneity of the [individual] for whom the methods and techniques are intended" (1999, p. 145). Ultimately, such an approach to disaster mental health formulation would lead the interventionist to choose the best intervention, or set of interventions, to meet the then current needs of the individual, at that present point in time.

Building upon those historical foundations, we see an integrative approach, both strategically and tactically, as an integrated multi-faceted system incorporating a full continuum of care. Consistent with Millon's concepts of using interacting combinations of interventions to achieve an enhancing clinical effect while sequentially combining tactical interventions in their most clinically useful ways, and selecting the tactical interventions based on the specific needs of each situation, the most effective outcome is likely to be achieved.

Ideally, this continuum of psychological care must be seamlessly integrated with a continuum of emergency medical services. As Ruzek, et al. (2004) notes, "Because much of the potential harm to survivors of disaster or terrorism (and their families) will be related to their mental health and role functioning, preparedness requires the active integration of behavioral health into emergency medicine in every component of disaster response…Delivery of direct mental health care must include: (1) survivor and family education; (2) identification and referral of those requiring immediate care and follow-up; (3) group education and support services; and (4) individual counseling. In order for effective response to occur, the integration of psychosocial care into disaster response must occur prior to the disaster itself, and will depend on effective collaboration between medical and mental health care providers. At workplaces, emergency medical care centers must ensure that staff and their families are properly trained and supported with regard to their disaster functions and encouraged to develop personal/family disaster plans" (p. 46).

According to Watson and Shalev (2005), "Early intervention in mass traumatic events should be embedded within a multidisciplinary, multi-tiered disaster mental health system. Early interventions should be utilized in a culturally sensitive manner, related to the local formulation of problems and ways of coping, and applied flexibly, in ways that match needs and situational context and take into account the ongoing stressors, reactions, and resources" (p. 123).

Thus, we see a dramatic evolution in the formulation of disaster mental health services. Incumbent in this evolutionary process is the burden of specialized training. Stapleton, et al (2006) have shown that specialized training in crisis intervention may virtually double the clinical effectiveness of the intervention. No longer is it appropriate to assume that simply because one possesses a license for the independent practice of mental health that one is competent in this nascent and highly specialized clinical domain. That having been said, it is also emerging as common practice to train "peer" crisis interventionists (Sheehan, et al., 2004). Peer interventionists are individuals who have received specialized crisis intervention training, but whose professional training is in some field other than mental health. Peer crisis interventionists are commonly used in law enforcement, fire suppression, emergency medical services, urban search and rescue teams, specialized industrial settings, etc.

## *Resistance, Resiliency, Recovery: A Continuum of Care*

The resilience, resistance, recovery formulation represents an outcome-driven continuum of care approach to critical incident and disaster management (Kaminsky, et al., 2006). At its core, this model assists in strategic planning by considering both multiple intervention perspectives and subsequently aligning the tactical interventions most suited to achieve the desired outcome, that is, building resistance, enhancing resilience, or facilitating the recovery of those affected by the disaster. Specific disaster interventions should be combined and sequenced in such a manner so as to yield the most efficient and effective intervention possible. As noted earlier, the various combinations and permutations that are actually utilized will be determined by the unique demands of each critical incident or disaster, and the unique demands of each target population, as they arise in real time. Let us examine the 3 elements of the model.

***Resistance*** refers to the ability of an individual, a group, an organization, or even an entire population, to literally *resist* manifestations of clinical distress, impairment, or dysfunction associated

with critical incidents, terrorism, and even mass disasters. Resistance may be thought of as a form of psychological/ behavioral immunity to distress and dysfunction.

Historically, this element of disaster mental health response was conspicuous in its absence. More specifically, disaster mental health services were almost exclusively reactionary in nature. The notion of creating resistance represents a proactive step in disaster mental health. Notions of "psychological immunization" and "psychological body armor" are engendered by the introduction of this intervention to the pre-disaster phase of the temporal continuum.

***Resilience*** refers to the ability of an individual, a group, an organization, or even an entire population, to *rapidly and effectively rebound* from psychological and/or behavioral perturbations associated with critical incidents, terrorism, and even mass disasters.

***Recovery*** refers to the ability of an individual, a group, or even an organization to recover the disabling adverse impact of a critical incident or disaster.

The study of resistance and resilience originated from observations in developmental psychology literature with children that appeared to function well despite potentially traumatic or averse conditions, referred to as "resilient children" (Masten & Coatsworth, 1998). Early efforts primarily focused on personal qualities of these resilient children, like autonomy or high self-esteem (see Masten & Garmezy, 1985). As work in this field evolved, researchers acknowledged that resilience might also derive from factors external to an individual. Garmezy and colleagues (1981, 1993) examined children of mentally ill parents as well as children with behavioral problems for over ten years and delineated three types of factors that promote resilience. First, personality-based factors such as internal locus of control, ie, the belief that one has control over the course of their life (Luthar, 1991), self-esteem, and self-efficacy (Rutter, 1987) seemed protective. Factors related to self-esteem and self-efficacy include positivity, hope, or optimism (Zimrin, 1986). The remaining two factors were external factors and included family support and cohesion, and external support systems.

## *Building Resistance*

Resistance, we believe is best built by the following empirically supported formulations which collectively may be seen to have two "active ingredients:" *expectancy and experience*. Four strategies are listed below:

*Providing realistic preparation.* Setting appropriate expectations, developing stress management and coping skills, and providing realistic pre-incident training all may serve to foster stress resistance (Meichenbaum 1985; Hobfall et al. 1991, Schiraldi & Brown, 2001, 2002; Seligman, Reivich, Jaycox, & Gillham, 1995).

*Fostering group cohesion and social support*. Social support has been shown to buffer stress (Flannery, 1990). The creation of group cohesion, with an underlying infrastructure for social support, may be useful (American Psychological Association, 2002). An essential element of fostering cohesion and support, we believe, will be effective risk communications. Risk communication should be designed to provide the following five essential elements: information (and rumor deterrence), reassurance, direction, motivation, and a sense of connectedness. There exists a myth that withholding bad news is desirable. The fact is that there is no such thing as an information vacuum. In the absence of credible information from government, management, etc., the will be the rise of informal communication patterns, i.e., rumors. Providing information in as timely and accurate a manner possible serves to reduce anxiety and to empower individuals to be less dependent upon managerial resources.

*Fostering positive cognitions*. Cognitive appraisals appear to be key determinants of stress (see Everly & Lating, 2002, for a review) and trauma (Ehlers & Clark, 2003). Positive cognitions appear to deter excessive stress and foster resilience (Affleck & Tennen, 1996; Meichenbaum, 1985; Taylor, 1983, Tedeschi & Calhoun, 1996). Positive cognitions may include positive memories of those lost in war/terrorism, and/or identification with a noble motive, such as religion or nationalism.

*Building self-efficacy and hardiness*

Building self-efficacy and hardiness is important to enhancing resistance to stress and fostering resiliency. The primary formulation which will serve as the basis for this notion resides in the work of Albert Bandura (self-efficacy) and Kobasa, Maddi & Kahn (hardiness).

***Self-efficacy:***

Bandura's work is summarized in his magnum opus on self-efficacy and human agency (1997). Bandura defines the perception of self-efficacy as the belief in one's ability to organize and execute the courses of action required to achieve necessary and desired goals. (See also Freud, 1911/1958). This perception of control, or influence, Bandura points out, is an essential aspect of life itself; "People guide their lives by their beliefs of personal efficacy" (Bandura, 1997, p. 3). He goes on to note:

“People’ s beliefs in their efficacy have diverse effects. Such beliefs influence the courses of action people choose to pursue, how much effort they put forth in given endeavors, how long they will persevere in the face of obstacles and failures, their resilience to adversity, whether their thought patterns are self-hindering or self-aiding, how much stress and depression they experience in coping with taxing environmental demands, and the level of accomplishments they realize” (Bandura, 1997, p.3).

Bandura (1977, 1982, 1997) has described four sources that affect the perception of self-efficacy and are particularly relevant in terms of the resistance/resilience model. They are as follows:

*Performance*. "Enactive attainments provide the most influential source of efficacy information. Successes raise efficacy appraisals, repeated failures lower them." (Bandura, 1982, pp. 26-27). Bandura has also shown perceptions of self-efficacy to influence subsequent performance, as well as autonomic nervous system activity. Though enactive attainment appears to be the single most powerful way of influencing perceptions of self-efficacy, it is important to note that attainment is in the eye of the beholder. Objective success shows no favorable impact on self-efficacy if the individual *perceives* that success as "failure." One might argue that the experience of the United States in the Vietnam conflict is just such an example. As the perception of efficacy eroded, so did political support. Objective military success was subordinated to the perception of a “war that could never be won.” Therefore, retreat became the only option.

*Vicarious experience.* "Self-efficacy appraisals are also partly influenced by vicarious experiences. Seeing or visualizing similar others perform successfully can raise self-percepts of efficacy in observers that they too possess the capabilities to master comparable activities.... By the same token, observing others to be of similar competence fail despite high efforts lowers observers judgments of their own capabilities and undermines their efforts" (Bandura, 1982, p. 27). Such modeling of experience as described may be done in vivo, in vitro, or symbolically.

*Verbal persuasion and support.* Verbal persuasion comprises such things such as suggestion, education, and reinterpretation of exogenous, environmental, or inter-operative stimuli so as to improve perceptions of self-efficacy. Such cognitive alterations may be done by oneself or by another (e.g., a coach, a charismatic leader, or even a therapist).

*Physiological / affective* arousal. "People rely partly on their state of physiological arousal in judging their capabilities and vulnerability to stress. Because unusually high arousal usually debilitates performance, individuals are more likely to expect success when they are not beset by aversive arousal. Fear reactions generate further fear through anticipatory self-arousal.... People can rouse themselves to elevated levels of distress that produce the very dysfunctions they fear. Treatments that eliminate emotional arousal heighten perceived efficacy with corresponding improvements in performance" (Bandura, 1982, p. 28). Biofeedback and other techniques which induce the relaxation response are useful interventions within this domain.

***Hardiness**:*

Kobasa (1979) was the first to introduce the concept of hardiness into the psychological literature. She defined it as a stable personality trait. Hardiness is a composite of interrelated attitudes of commitment, control, and challenge. These attributes facilitate adjustment to adverse life experiences by turning them into growth inducing experiences, as opposed to incapacitating, events (Maddi, 1997). *Commitment*, as conceptualized by Kobasa (1979) was the ability to turn events into something meaningful and important. Individuals high in *commitment* get involved rather than withdraw. They have careers rather than jobs. C*ontrol* was defined as the belief that individuals could influence their own lives and their environment. Kobasa (1979) defined *challenge* as the belief that fulfillment in life results from growth and wisdom gained from difficult or challenging experiences. The combination of commitment, control, and challenge is theorized to be the driving force that aids individuals to pursue the future despite its uncertainty (Maddi, 1997). In summation, hardiness is not only expressive of mental health (Maddi & Khoshaba, 1994), but is also theorized to be a protective factor.

These notions of perceived personal efficacy and hardiness are relevant to understanding individual behavior, group behavior, large organizations, and even entire communities. Enhancing perceived efficacy and hardiness is an essential and intrinsic process for combating the adversity of mass disasters because it not only enhances effort and self-esteem, but also contradicts the perception of

helplessness while at the same time conveying the perception that the world is more controllable (i.e., safer).

In order to build resistance, in the sense of a prevention paradigm, the following measures may prove useful:

1. the creation of the perception of credible and competent leadership;
2. anticipatory guidance, setting appropriate expectations;
3. realistic training that fosters acute phase task orientations;
4. identification with a common purpose, goal;
5. identification with a higher ideal;
6. identification with a group to foster group identity;
7. stress management training; and
8. the expectation of the provision of family support.

## *Enhancing Resilience*

Resilience, it will be recalled, is the ability to rebound from dysfunction or impairment. In order to enhance resilience, the following measures may prove of value:

1. assessment of need;
2. effective leadership, especially crisis leadership
3. sustaining a credible, accurate information flow;
4. stress management;
5. establishment and utilization of social support networks;
6. fostering an acute phase task orientation;
7. implementation of "psychological first aid;"
8. utilization of small group crisis intervention for naturally occurring cohorts and families;
9. pastoral crisis intervention and chaplaincy services; and
10. psychological triage.

Collectively, the aforementioned recommendations should be integrated in a seamless continuum of intervention tactics as recommended previously in this monograph.

Staten (1992) makes a case for better training in building collapse rescue. This is a theme mentioned in papers reviewed earlier. The author cites several disasters from the early '90s during which better preparedness and training could have prevented deaths, including disasters in Turkey, Israel and Argentina. The author also describes the optimal method of extraction and provides guidelines for a successful search and rescue mission. One of these guidelines stresses preparedness for the emotional and psychological implications of the incident among rescuers, victims, and families. Mental health professionals and crisis intervention should be made available to the families of those believed trapped at the earliest opportunity. The stress of protracted digging, discovery of disfigured remains, odd smells and sights can affect even the most hardened of rescue professionals. Supervisory personnel may want to set aside a special place for families and psychological care near to, but, off of the rescue site.

Alvarez and Hunt (2005) review the risks and resilience factors for canine search and rescue handlers deployed after 9/11. Canine handlers reported more PTSD and general psychological than those who were not deployed. Among deployed handlers, prior psychiatric diagnoses and peritraumatic reactions were associated with psychological distress whereas social support and training were protective. More extensive screening and prophylactic interventions for individuals with a history of mental illness could be beneficial.

The International Federation of the Red Cross and Red Crescent Societies (2008) have released a paper that describes the psychosocial support program initiated by the Russian Red Cross Society in for the families of miners affected by a blast in two Russian coal mines. In the first emergency, only 93 out of 203 people in the mine were rescued. The operation was initially based upon experience gained following the massacre in the school at Beslan over the last two years, but it was realized that there were factors unique to people affected by mine accidents: mine accidents have greater effect on everyday life because mines continue to be operational; some miners who had survived the accident often could not go back to work, and the families of miners who returned to work constantly worry about their lives. Other lessons learned in this particular situation included:

- The earlier psychosocial support was provided to the affected population, the better the outcomes.
- Only an active approach (outreach) of visiting the affected families at their homes allowed for effective psychosocial support.

- Switching from individual work to group meetings attracted more people and offered the affected people an opportunity to restore social contacts and to make their own decisions on matters important to them.
- There was need to set up psychosocial support centers

Deep sub-surface mining is one of South Africa's leading—and most dangerous—industries. Maiden (2005). describes the trauma management program ("COPE") developed by the employee assistance program at the Chamber of Mines in South Africa to respond to workplace accidents. The guiding principles of the program include the fact that psychological trauma is given the same consideration as physical trauma, that the program is voluntary and confidential, and participation cannot affect promotion potential. The program also provides supervisor training to help identify potential PTSD cases based on changes in work performance. The program identifies three levels of intervention: individual major incident, individual minor incident, and widespread incident; each of these types has a methodology associated with it. The program's activities are based on the trauma management principles of simplicity, proximity, immediacy, and expectancy.

Technology may prove useful in enhancing resilience. In response to the psychological strain that entrapment can place on persons, two researchers have been working, and given a grant by Microsoft, to create the robotic Survivor Buddy. It will be designed to be an emergency companion to people stuck in the crossfire of snipers, in mines, or under the rubble of an earthquake-ravaged building. It is expected that the robot will play soothing music to trapped victims and feature a screen showing the faces of loved ones and rescuers trying to reach them. It will also deliver water and transmit a victim's vital signs to doctors (Colavecchio-Van Sickler, 2008).

Thus, we see that while resistance is fostered largely by pre-event planning and training, resilience as currently defined, is fostered by the provision of crisis intervention and psychological first aid services which may serve as a psychological safety net to assist individuals and groups to rebound from adversity. Everly, et al. (2006) provide a review and statistical analysis of workplace-based crisis intervention programs. The overall effectiveness is estimated at an effect size of .6 and appears to exert mitigating influences upon anxiety, depression, and alcohol use post critical incidents. Such data would appear to warrant the consideration of such programs.

### *Fostering Recovery*

As we just discussed, resistance and resilience are pro-active steps needed to be taken to prepare our community for mass disasters. *Recovery*, on the other hand, refers to the ability of an individual, a group, an organization, or even an entire population, to literally recover the ability to adaptively function, both psychologically and behaviorally, in the wake of a significant clinical distress, impairment, or dysfunction subsequent to disasters. However, similar to building resistance and resiliency, the essential building block to recover from a mass disaster is a populations' propensity for "regaining control over their emotional responses and placing the trauma in the larger perspective of their lives as something that happened but that can be expected to not recur if the individual is able to retake charge of his or her life."(van der Kolk, et al., 2002).

In order to enhance the recovery process, our review of the research has illustrated that cognitive-behavioral psychotherapy ("CBT") is one of the best methods to aid trauma victims. CBT combines the use of techniques from cognitive therapy and behavioral therapy. CBT is based on the premise that cognition is a primary determinant of behavior and mood. Thus, CBT uses behavioral and verbal techniques to identify and correct problematic thinking patterns that are at the root of dysfunctional behavior. A complete review of the benefits, indications, and contraindications of CBT have been previously defined and beyond the scope of this paper (see Bryant & Harvey, 2000).

Several acute trauma studies have established the benefits of CBT for trauma victims. (Frank et al., 1988, Foa et al, 1995; Bryant et al. 1998(b), Difede et al. 1997, Bryant et al. 1999). Cognitive appraisals appear to be key determinants of stress (see Everly& Lating, 2002, for a review) and trauma (Ehlers & Clark, 2003). Conversely, positive cognitions appear to deter excessive stress and foster resiliency (Affleck & Tennen, 1996; Meichenbaum, 1985; Taylor, 1983; Tedeschi & Calhoun, 1996). Thus, CBT appears to be effective method to enhance recovery.

## Leadership and the Incident Management and Incident Command System (ICS)

***"Structure is an antidote for chaos."***

Throughout this monograph, we have referred to the importance of leadership in increasing resistance as well as resiliency. Let's discuss the notion of leadership.

## *Leadership: What Is It?*

"The term leadership is ubiquitous…Political candidates proclaim it, organizations seek it, and the media discusses it ad nauseum…" (Vroom & Jago, 2007, p. 17). Despite these truths, there remains no generally accepted definition of, nor path to, effective leadership. What all definitions do agree upon is that leadership involves the ability to influence others. So we know there is leadership during and after the exertion of influence, but not necessarily before.

In their review of leadership in high risk, often life and death, situations, called "in extremis" situations, Thomas Kolditz and Donna Brazil (2005) conclude that authentic leadership is most valuable. Authentic leaders are confident, optimistic leaders who possess high moral character and ethical reasoning. Authentic leaders are most likely to create loyalty, obedience, admiration, and respect. These leaders lead by giving purpose, motivation, and providing direction "in extremis" conditions. Authentic leaders seem to exert much of their effectiveness by allaying the fears of, and providing hope for, those who follow.

## *Leadership Resides in Those Who Follow*

So far, we have learned that the crisis leader must possess a general belief in one's ability to make a difference and to be successful, regardless of the challenge and that this sense of confidence must be communicated to those who will follow.

It is generally recognized that when members of a group defer to a central command that serves to coordinate and direct resources, group performance increases. In the final analysis, leadership resides with those who follow. While the leader may have the vision and courage to lead, it is those who follow who must recognize those qualities. It is those who follow who must perceive the leader as someone who can be trusted, someone who possesses strength and competence to successfully lead those who follow to safety and success.

Leadership satisfies an evolutionary requirement. Charles Darwin, writing in 1871, noted, "A tribe including many members who were always ready to aid one another, and to sacrifice themselves for the common good would be victorious over most other tribes."

In an illuminating paper written in the journal American Psychologist, the authors conclude that individuals seek out leaders when in crisis. The qualities that individuals most often seek out are competence and benevolence. Thus, we see that leaders seem to exert much of their effectiveness by allaying the fears of, and providing hope for, those who follow.

## *Incident Management*

History has taught that the effectiveness of a particular crisis or disaster intervention often relies on the organization behind the response itself. Purely reactive, unplanned, or uncoordinated disaster response is generally ineffective and, at times, may even be counterproductive. On the grand scale, the disaster response to Hurricane Katrina stands as a tragic reminder of the consequences of failed leadership and failed coordination of services. The Sago mine disaster stands as an example of poorly coordinated public information services. But the need for organized services is perhaps better exemplified by the Lassing, Austria mine collapse in July 1998. The Lassing mine collapse provides a worthwhile case study of what can go wrong during the response to trapped miners. Initially, there was confusion as to whether the mine company or the government was in charge of the rescue efforts. However, both teams were trained for professional mining accident rescue missions; trained crisis management professionals offered their help, but their offer was rejected. A variety of organizations were involved, each with its own leader: the disaster relief agency of the state, the mining team, local political authorities, firefighters, Red Cross, police, and army. As a result of the lapse in leadership, chaos was predominant in the first phase of the rescue mission. In spite of this, the leaders recognized early the need for psychological support and help. A psychologist and two social workers were called to duty, but again none of these were trained to provide psychological support in disasters and subsequently left the scene. Next, troops of police psychologists specially trained for hostage situations were called to duty, and did appropriate

work but were overwhelmed by the needs for support. Consequently, professionally trained support teams were called, and ultimately, forty psychologists were working in the field.

From the very inception of planning for a disaster response, psychological crisis intervention personnel must be involved at the highest levels of planning and coordination. These personnel must be blend their assessment skills with strategic planning skills and the selection of the best available crisis intervention procedures to match the needs of the people who are in a state of crisis. The groups that should be targeted for potential intervention will include:

1. personnel who are trapped (intervention points include pre-incident preparation, intervention during entrapment, acute post escape, and post escape re-integration)
2. rescue and recovery personnel (intervention points include pre-incident preparation, intervention during rescue and recovery, acute post rescue and recovery)
3. families of trapped mining personnel (intervention points include pre-incident preparation, intervention during entrapment, acute post escape, and post escape re-integration)
4. families of other mine personnel (primary intervention point is during rescue and recovery operations)
5. community civilians not directly in involved in the operations of the mine (primary intervention point is during rescue and recovery operations)

The need for an organized and highly coordinated disaster response extends to all disaster response and related other services. In this section a formal structure for integrating disaster response services will be discussed.

Disaster response services can be coordinated using a simple set of questions – *who, what, when, and where.* That is, who needs support, what types of assistance they need, when they need the support, where the support will be provided.

The greater the scale of the incident and the more complex the situation, the greater is the need for organization. Disaster intervention work, for example, requires an elaborate network of interrelated elements to deliver the best support services, at the right times and under the

circumstances to assure the greatest potential for an effective and efficient crisis response. That response requires logistical and coordination support often including housing, transportation, communications, security, food and water, supplies, liaison with other organizations, and the replacement and rehabilitation of fatigued personnel. The term fatigue not only refers to physical fatigue, but to mental fatigue, as well.

Even before the 2001 terrorist attacks on the United States, the federal government, in cooperation and collaboration with law enforcement and emergency response organizations, was engaged in the development of a nationwide comprehensive program to manage emergency operations. The need for such a program obviously became more evident after the attacks. The program is entitled the "National Incident Management System" (NIMS). The NIMS program contains the Incident Command System (ICS), which itself is the result of extensive development efforts that date back to the organization of military operations as long ago as the American Civil War (1861-1864). Much of the current material on the ICS is the result of a nearly forty year development process in emergency services organizations that began with a series of disastrous fires in California in 1970 (National Wildfire Coordinating Group, 1994).

This section will familiarize the reader with an overview of NIMS and its primary components, especially the Incident Command System (ICS). The coverage of NIMS and the ICS in this chapter, however, does not in any way, constitute formal training in NIMS, but rather is designed to reiterate the need for a highly structured ICS capable of responding to mining disasters. The reader should view the material only as an overview and be cognizant of the fact that one must obtain appropriate training from an official US government source such as FEMA-NIMS@dhs.gov or http://www.fema.gov/emergency/nims/nims_training.shtm. The Federal government has endorsed some states, tribal councils, counties and emergency services organizations to provide NIMS training programs. All NIMS training, however, must adhere strictly to the training curriculum established by Federal Emergency Management Agency (NIMS Integration Center, 2007a, b, c).

## *Essential Information*

The *National Incident Management System (NIMS)* is an administrative system to handle any emergency including the multi-jurisdictional and multi-agency response of local, state and federal government resources to a large- scale incident such as a disaster. NIMS was specifically developed to enhance the capabilities of emergency responders from different jurisdictions and disciplines to work together more efficiently during natural disasters and other emergencies, including acts of terrorism. The NIMS approach to emergency management is one of standardization. It focuses on an incident management program with a set of commonly accepted emergency management structures and procedures, universal terminology, as well as inter-agency communication, cooperation and mutual aid. NIMS places considerable emphasis on preparing for emergencies as well as resource management during the response aspects of a disaster.

On February 28, 2003, the President of the United States issued Homeland Security Presidential Directive (HSPD)–5, *Management of Domestic Incidents* (Bush, 2003). This document directed the Secretary of Homeland Security to develop and administer a National Incident Management System (NIMS). The system assists communities in preparing for, responding to and recovering from domestic events. It incorporates the best emergency management practices that have evolved over decades of experience. HSPD-5 requires all federal agencies to utilize the NIMS program in their prevention, mitigation, response and recovery activities. Additionally, any local, tribal, state or private organizations receiving federal funds are also required to use the NIMS program (US Department of Homeland Security, 2004).

Because of the HSPD-5, the utilization of the NIMS Incident Command System has grown so widespread and so well accepted that every individual, from any type of organization that responds to any domestic disaster, including mining disasters, should receive training in the NIMS program.

## *NIMS Components*

The NIMS program is extensive. For most intervention personnel, familiarity with all of that information would be unnecessary and, needless to say, a time consuming, monumental task. The emphasis in this chapter will be on an overview of the NIMS program and a focus on the essential information for understanding and responding to the mental health demands associated with a mining disaster.

To start, we will first provide a broad overview of NIMS. There are six main components of NIMS. They are:

**1. Command and Management**

a. Incident Command System

b. Multi-agency Coordination

c. Public Information System

These elements may be thought of as "command and control." In the wake of a mine disaster, the immediate establishment and mobilization of these functions are essential elements to effective rescue and recovery.

**2. Preparedness**

This component covers every aspect of emergency planning, education, preparation of resources, training of personnel, and efforts to mitigate or eliminate potential threats.

Planning for a mining disaster must strive for the seamless integration of mental health preparedness and response functions.

**3. Resource Management**

The focus of this component is on the identification, description, listing, and credentialing of all types of resources that might respond to a disaster. Many of these resources are located in one jurisdiction and loaned to other jurisdictions during emergencies. The term for borrowing and loaning of resources between jurisdictions is "mutual aid."

In the case of a mining disaster, internal resources are quickly mobilized and are often quickly exhausted. Mental errors can be as detrimental as are physical/ operational errors. Mobilization of external resources becomes essential if an effective disaster response is to be sustained. This is true in the case of mental health resources, as well. It is therefore essential that internal mental health resources are augmented with external mental health resources. Credentialing of external mental health resources is as important as the credentialing of operational, engineering, and rescue and recovery resources.

**4. Communications and Information Management**

The fourth component of the NIMS addresses the important issue of standardized intra and inter-organizational communications as well as standard record keeping and other information management procedures.

Internal and external communications are likely to become a significant operational challenge during a mining disaster. Communication errors or delays in communications can hinder the progression of an organized and effective rescue and recovery operation.

**5. Supporting Technologies**

NIMS encourages the development, adoption, and utilization of new technologies that enhance emergency management. It also encourages the use of interoperable communication devices that allow organizations to communicate easily with one another during emergencies. Redundancy in communication technology is encouraged.

**6. Ongoing Management and Maintenance**

NIMS is a dynamic system. It requires openness and flexibility to change. The system needs vigilant maintenance to make adaptations to assure that it is capable of responding appropriately to changes in the emergency management environment. NIMS is constantly re-evaluated and improved by a management team at the NIMS Integration Center within the Federal Emergency Management Agency (NIMS Integration Center, 2007d).

## *The Need for the Incident Command System*

The Incident Command System (ICS) is the part of the NIMS program that will have the greatest impact on response and recovery personnel at any mining disaster and, therefore, it will receive the most attention in this chapter. All disaster responders need to understand and work within the ICS. Working within the system is a necessity for all response personnel not only because it is required by the presidential directive (Bush, 2003), but also because ICS is the universal emergency management approach currently utilized within the United States and many other nations. ICS offers a proven and useful organizational tool for crisis support personnel who are dealing with disasters, such as mining disasters, that can quickly overwhelm local resources. The system helps crisis intervention organizations

to work as teams and to monitor their own personnel to avoid stretching individuals beyond reasonable capacities.

## *Key Features of the ICS*

### *1. Common Terminology*

Common terminology allows many different types of organizations to communicate with each other and to work together for the best possible management of an emergency. The umbrella of common terminology covers organizational functions, resource descriptions and incident facilities. Even psychological crisis intervention teams should emulate the common terminology and philosophy of the ICS program. Unfortunately, there is currently very little standardization of terms in the disaster mental health field (Everly & Mitchell, 2008).

### *2. Modular Organization*

One of the most important features of the ICS is the use of modules in its organizational structure. Depending on the size and complexity of the emergency, Incident Commanders may add to the ICS or remove from the ICS any specific modules he or she deems necessary. It is also possible to subdivide any module, if necessary, to enhance management and coordination functions. The Incident Commander is responsible for the entire organizational structure during an emergency. Changes in the ICS occur as responders assess the needs of the situation under "real world" field conditions. As additional modules are required, the ICS organizational structure expands from the top-down.

For example, let us suppose that an Incident Commander (IC) is advised by his or her staff that rescue personnel are having a difficult time emotionally because of large scale carnage encountered in attempts to reach other miners who are trapped but assumed alive. The IC then assigns a staff member, called a Liaison Officer (LO), to take on the responsibility of assuring that psychological support or crisis intervention services are provided to emergency operations personnel during deployment of immediately after shift termination. The Liaison Officer then becomes responsible for locating, mobilizing, and implementing psychological support services so as to facilitate ongoing rescue operations. Similarly, the LO may be requested to mobilize psychological support services for the families of miners who were trapped in the mine itself.

If necessary, the human services functions can expand. Suppose further assessment of the situation, described in the example above, indicates that the incident is also causing significant distress for large numbers of community people. The LO could request specialized support services for community members, as well.

Every time the Incident Commander adds a significant new function to the ICS, there must be a commensurate increase in the size of the leadership corps (NIMS Integration Center, 2007d).

***3. Management by Objective***

In the ICS, specific, measurable objectives are established as early as possible. Everyone in the management structure is informed of the objectives and each part of the organization supports the achievement of the objectives.

In the provision of psychological support services, target groups are identified and interventions are selected to meet defined outcome. Admittedly, psychological outcome are more abstract than traditional operational outcome.

***4. Incident Action Plans***

During each operational period an Incident Action Plan (IAP) must be developed. The IAP provides the objectives for both the operations and the support activities for that particular work period. An IAP, therefore, includes the proposed activities of the crisis intervention team for a specific work shift. IAPs help to answer the important *who, what, when, and where* questions mentioned earlier.

***5. Span of Control***

Within the ICS, leaders typically supervise between three and seven subordinates depending on the circumstances and the complexity of the situation. Most leaders in emergencies are overwhelmed by too large of a span of control. Greater than seven subordinates can be an excessive number.

***6. Facilities***

Very early in a large-scale incident, the managers must identify locations and facilities that will sustain the operations and support services. The first facilities to be established are those for the command post and communications. A staging area is also essential. The staging area is a location where most of the responding resources check-in and remain until needed. It is very important to

establish facilities for medical triage and treatment as well as for food services, supplies, and locations where psychological crisis intervention services can be operationalized.

***7. Comprehensive Resource Management***

All resources, equipment, teams, supplies and facilities must be categorized, ordered, dispatched, and tracked during the incident. At the conclusion of the incident, all of the personnel and materials utilized during the incident must be recovered and restored to a "ready" condition. The crisis intervention team usually goes through a Post Action Staff Support program to assure that all team members are adequately recovered from the intense work of the deployment (Everly & Mitchell, 2008).

***8. Integrated Communications***

The ICS depends upon intra and inter-organizational communications and a comprehensive plan for communications. Lines of communications and communications redundancy are delineated.

***9. Clear Command Structure***

The agency with primary jurisdictional authority designates the individual at the scene of an incident with the responsibility to *establish command immediately in the situation.* Provisions should also in place to *transfer command* efficiently to higher-ranking authorities when they arrive on scene, or, temporarily, to a subordinate when the Incident Commander needs rest. Transfer procedures have typically been developed well in advance of an emergency and transitions of authority in the field usually appear seamless. Representation from ownership, local, state, and potentially Federal governments must be integrated so as to reduce confusion and improve sustained effective rescue and recovery functions.

***10. Chain of Command, Unity of Command, Unified Command***

There are important concepts that apply to ICS command issues. They are:

a) Chain of Command

b) Command Staff

c) Command Post

d) Unity of Command

e) Unified Command

*Chain of Command* refers to the orderly line of authority over the incident operations. Simply put, team or unit members report to their team leaders. Team leaders report to division supervisors,

who, in turn, report to branch directors. In the higher levels of the command structure, branch directors report to section chiefs who communicate to the Incident Command level within ICS. The chain of command helps to maintain the span of control described earlier.

The Incident Commander at a mining disaster will usually benefit from a *Command Staff* consisting of at least a *Safety Officer* (SO), a *Liaison Officer* (LO), *a Public Information Officer* (IO), a *Medical Advisor,* a *Security Advisor,* and *Specialty Advisors* (e.g., engineering, hazardous materials, and mental health). Other Command Staff positions may be added to address unusual circumstances.

The *Command Post* (CP) is the physical location near the scene in which the IC and the Command Staff make decisions and oversee all of the activities associated with the operations in the field. Command Posts may range from extremely simple up to the very complex depending on the resources available within the primary jurisdiction. Some CPs are no more sophisticated than the hood or tailgate of a vehicle, while others are housed in elaborate, well equipped buses or large trailers with communications consoles and a small conference room for Command Staff meetings. The CP will be located as close to the mine as possible, while remaining at a safe physical distance.

*Unity of Command* is the term used to describe the relationship between an individual and a supervisor. Every individual within the ICS has a designated supervisor. Without unity of command in a large-scale incident like a disaster, there would be enormous confusion at the scene.

*Unified Command* is a concept applied in large-scale events involving multiple agencies from either a single jurisdiction or a combination of agencies from multiple jurisdictions. Top leaders from each jurisdiction or agency meet together, develop a common strategic approach, and accept a single Unified Commander (UC) to lead the overall operations. In many cases, aspects of the Unified Command structure have been worked out in advance of a large-scale event. Unified Command enhances the ability of different agencies to work together without negatively affecting the authority, responsibility and accountability of individuals and their organizations.

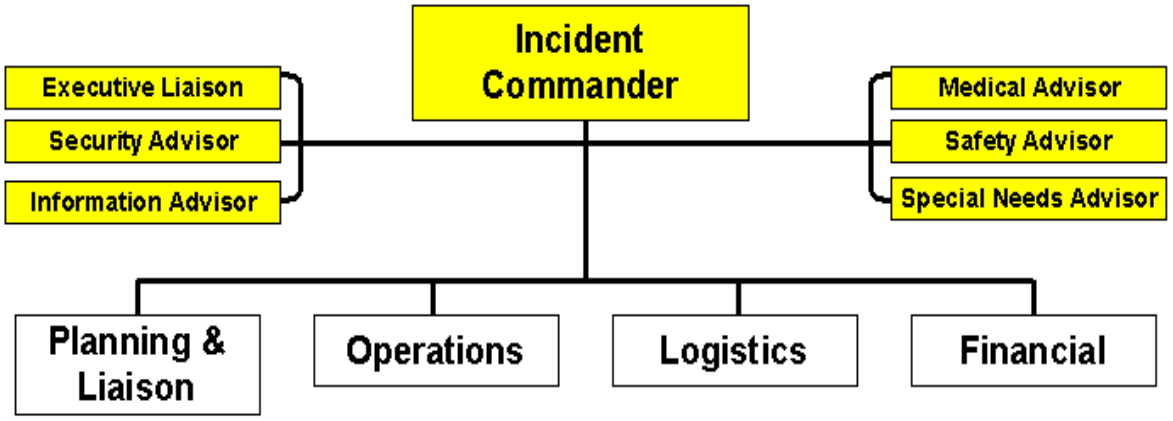
In the case of a mining disaster, economic, political, as well as operational and mental health safety factors inter-relate and have the potential to create conflict. A terrorist event is a good example of a situation in which the concept of unified command is essential.

## *Placement of Psychological Crisis Intervention Teams in ICS*

For many years, discussions have occurred about the placement of psychological crisis intervention teams within the ICS. Some think they should be under operations support at the branch level. Others argue for placement in the logistics section within the Medical Unit. Still others argue for a placement in the command level of the ICS. Perhaps, it may help to think of the Command Level as people and relationship oriented activities. However, every activity in the Planning and Liaison, Operations, Logistics, and Finance sections of the ICS are task oriented. The United States Coast Guard made a decision to place the psychological crisis intervention services in the command level. "Due to the importance of the mental well-being of all response personnel and the highly specialized nature of the program, the [mental health] Specialist would be assigned to the Command Level of the organization and would report directly to the IC or UC" (United States Coast Guard, 2001, pg. 82). The practice of placing the mental health Specialist in the Command Staff is reaffirmed in the more recent publication of the *USCG Incident Management Handbook.* "…The [mental health] Specialist is normally assigned in Logistics under the Medical Unit Leader; however, an additional [mental health] Specialist is often assigned in the Command Staff working directly for the IC" (United States Coast Guard, 2006. pg. 82). The IC in a mining disaster might benefit from consideration of the policy of the USCG.

In the diagram below, the Command Function of the ICS system has been outlined with a sample command staff shown.

**The Advisory Staff**




(USDA, 2003)

## *Functional Areas in the Incident Command System*

The five main functions in ICS are:

1. Command (to manage all aspects of the emergency response)
2. Planning (assess intelligence and develop Incident Action Plans)
3. Operations (to apply tactics to carry out the Command's strategy)
4. Logistics ( to obtain and manage resources for the mission)
5. Finances (to maintain records, write reports and handle administrative functions)

As described above, psychological crisis intervention resources relate most to the Command function in ICS. The other four functions are extremely important and will be ongoing in a disaster, but crisis intervention personnel are not typically directly involved in managing or dealing with those functions. Any relationships they have with Planning, Operations, Logistics and Finance are more cursory and are generally arranged by the Crisis Intervention Specialist who is working with the Command Liaison Officer.

## *Structuring the Mental Health Response*

Psychological crisis intervention services would be wise to mirror some of the organizational structure and functions of the five ICS functions. The Crisis Intervention Specialist should have a crisis intervention liaison to relate to other organizations. It is important for a crisis intervention resource to have an administration specialist to keep records and write reports on the mental health teams' activities. The administration specialist should also make the necessary arrangements to obtain the basic supplies and resources to support the crisis intervention team in the field. A crisis intervention team should have a plans section to develop crisis intervention action plans for each work shift and for each target population.

Crisis teams must work with a single "Point of Contact" (POC) for all of the crisis intervention resources being brought to the scene. When dispatched to a scene, mental health team leaders should be instructed that upon the team' arrival, the team leaders should check in with the Liaison Officer from the Command Staff. All crisis intervention contact with the Planning, Operations, Logistics, and Finance sections should always be coordinated and directed through the Mental Health Specialist working in conjunction with the Command Liaison Officer. Adherence to such a policy will limit confusion and it will help to maintain appropriate span of control and the resource management guidelines.

## *Challenges of Rural and Isolated Response*

Disaster response represents a unique mental health challenge as it is. Responding in isolated and rural venues adds to the complexity. Difficulties may arise surrounding transportation, willingness to accept outside assistance, receptivity to the media, and willingness to accept assistance in the realm of mental health issues. The notion of psychological first aid (PFA) has been proposed as one intervention that may assist in overcoming the latter (Nusbaum, Wenzel, Everly, 2007).

## *Caution: Fatigue in Incident Command*

In the stress associated with a disaster, rescue and recovery personnel are likely to "run on adrenalin." Fatigue is not something that is commonly considered in the first echelon of preparedness planning. Nevertheless, fatigue in the incident command system can be a serious deterrent to effective rescue and recovery operations.

In a unique study on the quantification of impairment induced by fatigue, Lamond & Dawson (1998) compared the effects of sustained wakefulness and alcohol intoxication on a range of neurobehavioural tasks. Twenty-two healthy subjects, aged 19 to 26 years, participated in three experimental conditions consisting of a sustained wakefulness condition (wherein subjects were kept awake for twenty-eight hours), an alcohol condition (wherein subjects consumed an alcoholic beverage at 30 minute intervals until their blood alcohol concentration reached 0.10%), or a non-alcoholic condition. Performance was measured at hourly intervals using four tasks from a standardized computer-based test battery. Analysis of the test data revealed as blood alcohol concentration increased performance on all the tasks, except for one, significantly decreased. As hours of wakefulness increased performance levels for four of the six parameters significantly decreased. The placebo condition exerted no adverse effect. The authors conclude, "More importantly, equating the performance impairment in the two conditions indicated that, depending on the task measured, approximately 20 to 25 hours of wakefulness produced performance decrements equivalent to those observed at a BAC of 0.10%. Overall, these results suggest that moderate levels of sustained wakefulness produce performance equivalent to or greater than those observed at levels of alcohol intoxication deemed unacceptable when driving, working and/or operating dangerous equipment" (Lamond & Dawson, 1998, p. 1).

Proctor, et al. (1996) conducted a study of overtime shifts among 248 hourly paid automotive workers. A neuropsychological battery was given to all subjects. Multiple linear regression analysis found overtime predicted impaired performance on Trails A and B, Wisconsin Card Sort, and Vocabulary tests.

Data reviewed in the CDC monograph on overtime and extended shifts concludes there may be some adverse effect associated with 12 hours shifts. More specifically, such shifts when combined with high workloads, as would be the case in an emergency operations center, may be associated with diminished alertness and performance (Caruso, et al, 2004).

Kowalski-Trakofler, Vaught, & Scharf, (2003) have reviewed decision-making in emergencies and conclude, "a flatter communication hierarchy develops with more (unsolicited) information coming from the field to the command centre" (p. 287). This potentiates a condition wherein the command center may be overwhelmed with information and the ability to discern relevant from irrelevant information becomes blurred. Should shifts be extended and fatigue begin to emerge, the interaction may contribute to less than optimal decision-making.

Findings such as these would suggest that extended work shifts in the Incident Command Center during disaster operations may contribute to a decline in cognitive abilities. The implications for such a phenomenon would be an increased potential for

1) impaired decision-making
2) poor communications
3) compromised interactions with public, families, etc as the shifts are protracted during rescue and recovery operations.

Such a cautionary conclusion would suggest that operations throughout the Incident Command System should be closely monitored from a psychological perspective and shift rotations should be planned in such a manner so as to sustain the highest levels of collective cognitive performance possible.

## *Summary*

The Incident Command System is a well-developed and structured method of managing emergencies. It has a proven, forty-year old record of accomplishment in emergency services organizations. ICS accepts crisis and disaster mental health intervention services as another important resource. With only minor alterations, psychological crisis and other mental health intervention resources can work easily within the system and provide their services to numerous distressed

populations at any given mining disaster. In fact, the ICS system can facilitate the delivery of appropriate support services to operations personnel as well as to the citizens in need of support. Providers of disaster mental health services must be conversant in the ICS in that is the platform of delivery of such services. Finally, psychological crisis intervention personnel must have received specialized training in the principles and practices of crisis intervention and disaster mental health.

# Conclusions and Recommendations

Based upon the current review of literature, certain conclusions and recommendations would seem warranted with regard to the psychological aspects of escape, rescue, and recovery in the wake of disasters.

1. It seems clear that disasters may engender a unique form of psychological adversity and morbidity. Common symptoms include depression, anxiety, and posttraumatic stress syndromes. Further, there appears to be a dose-response relationship between exposure to traumata and the subsequent development of posttraumatic stress syndromes, especially PTSD. Finally, traumatic stress appears to be contagious.

2. Factors which seem to increase psychotraumatogenesis include, but are not limited to:

   a) being physically trapped,

   b) having a lack of hope, a fatalistic attitude

   c) poor self-efficacy

   d) being confined in an absence of light and ventilation

   e) being physically injured

   f) attempting to rescue others, especially without specialized training

3. Factors which would appear to protect against or mitigate psychotraumatogenesis include but are not limited to:

   a) social support

   b) speaking with others

   c) religion

   d) helping others

   e) specialized training for peer rescue personnel

4. Factors which may serve as psychologic triage criteria include but are not limited to:

a) peritraumatic dissociation

b) peritraumatic panic

c) peritraumatic depression

d) psychogenic amnesia

e) being physically injured

f) seeing others who were killed

g) belief one was going die

h) guilt

5. The manifestation of psychological and behavioral morbidity associated with escape, rescue, and recovery would seem to warrant consideration of programs designed to mitigate those reactions in both survivors and rescue and recovery personnel, alike.

6. The state-of-the art recommendation for such programs would be the utilization of an integrated, multi-component continuum of mental healthcare.

7. Such a continuum should range from building protective factors pre-incident (resistance), fostering the ability to rebound from an adverse event (resilience), as well as the ability to treat impairment (therapy), as indicated. The Johns Hopkins' model of Resistance, Resilience, and Recovery represents such a model continuum (Kaminsky, et al., 2006; Lating & Bono, 2008). Critical Incident Stress Management, as utilized by United Nations personnel would also appear to warrant consideration as a functional continuum of care.

8. Any such continuum of care should be firmly anchored in the empirically-based crisis intervention principles of proximity (outreach to survivors, their families, as well as other workers, and community members), immediacy (early intervention), and expectancy (the utilization of psychological first aid principles designed to mitigate symptoms and facilitate access to continued care if necessary). As the field of disaster mental health evolves, it is anticipated that the elements of resistance (fostering

protective factors) and enhancing natural resilience (e.g., through the reinforcement of naturally cohesive groups) will be the foci of future research and program development.

9. It is clear that specialized training in disaster mental health (over and above traditional training and licensure in mental health) is essential to the provision of effective acute post-disaster services.

10. All physical and psychological services must be housed within a standardized response system. The ICS within the NIMS model serves as a useful prototype to support all disaster response activities. To extend this notion to future considerations, it is anticipated that specialized training in "crisis leadership" will become an essential element in effective pre-incident preparation. Long shifts in the wake of a disaster may represent a challenge to effective disaster response, therefore, it is recommended that the disaster operations center plan to utilize personnel in shifts no longer than nine hours, if possible. For transition purposes three nine hour shifts would be utilized with the one hour overlap to facilitate transition.

11. Because many disasters, especially in the mining industry occur in isolated and rural locations special challenges arise. A potential reluctance to accept outside "mental health" services can be countered via the development of "peer" and family support programs (Sheehan, et al., 2004). Training in psychological first aid techniques for non-mental health providers becomes essential in such a scenario. Thought should be given to training indigenous resources, such as the faith-based community, in psychological first aid and pastoral crisis intervention (Everly, 2007). Transportation similarly becomes a challenge. The development of quick dispatch "go teams" is recommended. Guidance can also be provided to the disaster operations center via video and internet resources. Within the surrounding community, the training and mobilization of faith-based resources might be considered.

# References


Al-Nasar, F., & Everly, G. S., Jr. (1999). Prevalence of posttraumatic stress disorder among Kuwaiti firefighters. International Journal of Emergency Mental Health, 1(2), 99-101.

Affleck, G. & Tennen H. (1996). Constructing benefits from adversity: Adaptational significance and dispositional underpinnings. Journal of Personality, 64, 899-822.

Alvarez, J. and M. Hunt (2005). "Risk and resilience in canine search and rescue handlers after 9/11." J Trauma Stress, 18(5): 497-505.

Artiss, K. (1963). Human behavior under stress: From combat to social psychiatry. Military Medicine, 128, 1011-1015.

Asukai, N. (1999). Mental health effects following man-made toxic disasters: The sarin attack and arsenic poisoning case. Presented at the 11th Congress of World Association for Disaster and Emergency Medicine. Osaka, Japan.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavior change. Psychological Review, 84, 191-215.

Bandura, A. (1982). The self and mechanisms of agency. In J. Suls (Ed.), Psychological perspectives on the self (pp. 3-39). Hillsdale, NJ: Erlbaum.

Bandura, A. (1997). Self-efficacy: The exercise of control. New York: Freeman.

Basoglu, M., E. Salcioglu, et al. (2002). "Traumatic stress responses in earthquake survivors in Turkey." J Traumatic Stress, 15 (4), 269-276.

Berg, JS, Grieger, TA, & Spira, James L (2005). Psychiatric symptoms and cognitive appraisal following the near sinking of a research submarine. Military Medicine, 170, 1, 44-47.

Birmes, P., Brunet, A., et al. (2005) “Symptoms of peritraumatic and acute traumatic stress among victims of an industrial disaster.” Psychiatric Services **56** (1): 93-95.

Boscarino, J.A., Adams, R.E., & Figley, C.R. (2005). A prospective cohort study of the effectiveness of employer-sponsored crisis interventions after a major disaster. International Journal of Emergency Mental Health, 7, 9-22.

Boscarino, J. A., Galea, S., et al. (2003). Psychiatric medication use among Manhattan residents following the World Trade Center disaster. Journal of Trauma Stress, 16, 301-306.

Boscarino, J. A., Galea, S., et al. (2002). Utilization of mental health services following the September 11th terrorist attacks in Manhattan, New York City. Int J Emerg Ment Health , 4, 143-55.

Boscarino, J.A., Adams, R.E., Foa, E.B., & Landrigan, P.J. (2006). A propensity score analysis of brief worksite crisis interventions after the World Trade Center disaster: implications for intervention and research. Medical Care, 44(5):454-62.

Bowler, R. M., Murai, K. & True, R. H. (2001). Update and long-term sequelae of the sarin attack in the Tokyo, Japan subway. Chemical Health and Safety, 8(1), 53-55.

Brackbill, R. M., L. E. Thorpe, et al. (2006). "Surveillance for World Trade Center disaster health effects among survivors of collapsed and damaged buildings." MMWR Surveill Summ 55(2): 1-18.

Bryant, R.A., Harvey, A.G., Sackville, T., Dang, S, Basten, C. (1998). Assessing ASD: psychometric properties of a structured clinical interview. Psychological Assessment 10, 210-215.

Bryant, R.A., Sacksville, T., Dang, S., Moulds, M. Guthrie, R.G. (1999). Treating acute stress disorders: an evaluation of cognitive behavior therapy and supportive counseling technique. American Journal of Psychiatry, 156, 1780-1786.

Bryant, R.A., Moulds, M.L., Guthrie, R.M., Dang, S.T., Nixon, R.D.V. (2003). Imaginal exposure alone and imaginal exposure with cognitive restructuring in the treatment of posttraumatic stress disorder. Journal of Consulting and Clinical Psychology **71**, 706–712.

Bryant, R.A., & Harvey, A.G. (2000). Acute Stress Disorder: A handbook of theory, assessment, and treatment. Washington, D.C.: American Psychological Association.

Caplan, G. (1961). An approach to community mental health. NY: Grune and Stratton.

Caplan, G. (1964). Principles of preventive psychiatry. NY: Basic Books.

Cardenas, J., Williams, K, et al. (2003). "PTSD, major depressive symptoms, and substance abuse following September 11, 2001, in a Midwestern university population." Int J Emerg Ment Health, 5, 15-28.

Caruso, CC, Hitchcock, EM, Dick, RB, Russo, JM, & Schmidt, JM (2004). Overtime and extended work shifts. Washington, DC: USDHHS, CDC, NIOSH, Pub. No. 2004-143.

Center for Disease Control and Prevention.(2004). MMWR. Mental Health Status of World Trade Center Rescue and Recovery Workers and Volunteers --- New York City, July 2002--August 2004. September 10, 2004, 53 (35), 812-815.

Colavecchio-Van Sickler, S. (2008). A USF professor plans to add a heart to robot rescuers. St. Petersburg Times. St. Petersburg.

Darwin, C. (1871). The Descent of Man. London: Appleton, p. 132.

Decker, J. & Stubblebine, J (1972). Crisis intervention and prevention of psychiatric disability: A follow-up. American Journal of Psychiatry, 129, 725-729.

DiGiovanni, C. (1999). Domestic terrorism with chemical or biological agents—psychiatric aspects. American Journal of Psychiatry, 156, 1500-1505.

Ehlers, A. & Clark, D.C. Early psychological intervention for adult survivors of trauma: A review. Biological Psychiatry, 2003; 53, 817-826.

Eriksson, C., Kemp, H.V., et al. (2001). “Trauma Exposure and PTSD Symptoms in International Relief and Development Personnel.” Journal of Traumatic Stress **14** (1): 205-212.

Eriksson, N. & Lundin, T. (1996) “Early Traumatic Stress Reactions among Swedish Survivors of the m/s Estonia Disaster.” British Journal of Psychiatry **169**: 713-716.

Everly, GS, Jr., (2007). Pastoral Crisis Intervention. Ellicott City, MD: Chevron.

Everly, GS., Jr., & Flynn, B. (2006). Principles and practical procedures for acute psychological first aid training for personnel without mental health experience. International Journal of Emergency Mental Health, 8, 93-100.

Everly, GS, Jr., Hamilton, SE, Tyiska, CG, & Ellers, K. (in press). Mental Health Response to Disaster: Consensus Recommendations: Early Psychological Intervention Subcommittee (EPI), National Volunteer Organizations Active in Disaster (NVOAD). Aggression and Violent Behavior: A Review Journal.

Everly, G.S. Jr. & Lating, J. (2002) A Clinical Guide to the Treatment of the Human Stress Response, Second Edition. NY: Kluwer.

Everly, G.S. Jr. & Lating, J. (2004). Personality Guided Therapy of Posttraumatic Stress. Wash.D.C.: APA Press.

Everly, G.S., Jr. & Mitchell, J.T. (1999). Critical Incident Stress Management (CISM): A new era and standard of care in crisis intervention. Ellicott City, MD: Chevron.

Everly, G.S., Jr. & Mitchell, J.T. (2008). Integrative Crisis Intervention and Disaster Mental Health. Ellicott City, MD: Chevron.

Everly, GS, Jr., Sherman, MF, Stapleton, A., Barnett, DJ, Hiremath, G., & Links, J. (2006). Workplace crisis intervention: A systematic review of effect sizes. Journal of Workplace Behavioral Health, 21, 153-170.

Flannery, R.B., Jr. (1990). Social support and psychological trauma: A methodological review. Journal of Traumatic Stress, 3, 593-612.

Frank, E., Anderson, B., Stewart, B.D., Dancu, C., Hughes, C., West, D. Efficacy of cognitive behavior therapy and systematic desensitization in the treatment of rape trauma. Behavior Therapy, 1988; 19, 403-420.

Foa, E.B., Hearst, Ideda, D., Perry, K.J. (1995). Evaluation of a brief cognitive-behavioral program for the prevention of chronic PTSD in recent assault victims. Journal of Consultating and Clinical Psychology, 63, 948-955.

Fullerton, C.S., Ursano, R. J., & Wang, L. (2004). Acute stress disorder, posttraumatic stress disorder and depression in disaster or rescue workers. American Journal of Psychiatry, 161, 1370-1376.

Galea, S. & Resnick, H. (2005). Posttraumatic stress disorder in the general population after terrorist incidents: Considerations about the nature of exposure. CNS Spectrum, 10, 107-115.

Galea, S., Ahern, J., et al. (2002). Psychological sequelae of the September 11 terrorist attacks in New York City. New England Journal of Medicine, 346, 982-987.

Guo, Y., Chen, C., et al. (2004). “Posttraumatic stress disorder among professional and nonprofessional rescuers involved in an earthquake in Taiwan” Psychiatric Research **127**: 35-41.

Hersche, B. and O. Wenker (2000). "Case Report: Lassing Mining Accident." The Internet Journal of Rescue and Disaster Medicine, 2(1),

Hoge, C. W., Pavlin, J. A., et al. (2002). Psychological sequelae of September 11. New England Journal of Medicine, 347, 443-444.

Holloway, H.C., Norwood, A.E., Fullerton, C.S., Engel, C., & Ursano, R. (1997). The threat of biological weapons: Propholaxis and mitigation of psychosocial and social consequences. Journal of the American Medical Association, 275, 425-427.

Institute of Medicine. (2003). Preparing for the Psychological Consequences of Terrorism. Washington, D.C.: National Academy Press.

International Federation of the Red Cross and Red Crescent Societies (2008). Russian Federation: Mine blast in Kemerovo region. DREF Operation Final Report. Geneva, IFRC.

Joint Commission on Accreditation of Healthcare Organizations (2003). Healthcare at the Crossroads. Oakbrook Terrace, IL: Author.

Kaminsky, M.J., McCabe, O.L., Langlieb, A., Everly, G.S., Jr. (2005). Resistance, resilience, recovery: A new paradigm in disaster mental health services. In G.S. Everly, Jr. & C.L. Parker (eds) Mental health aspects of disaster (pp. 69 - 78). Baltimore: Johns Hopkins.

Kaminsky, M.J., McCabe, O.L., Langlieb, A., & Everly, GS, Jr. (2007). An evidence-informed model of human resistance, resilience, & recovery: The Johns Hopkins' outcomes-driven paradigm for disaster mental health services. Brief Therapy and Crisis Intervention, 7, 1-11.

Kardiner, A. & Spiegel, H. (1947). War, Stress, and Neurotic Illness. NY: Hoeber.

Karsenty, E., Shemer, J., Alscech, I., Cojocaru, B., Moscovitz, M., Shapiro, Y., & Danon, Y. L. (1991). Medical aspects of the Iraqi missile attacks on Israel. Israel Journal of Medical Sciences, 27, 603-607.

Kolditz, TA & Brazil, DM (2005). Authentic leadership in in extemis settings. Monographs in Leadership and Management, 3, 345-256.

Kowalski-Trakofler, K.M., Vaught, C. and Scharf, T. (2003) .Judgment and decision making under stress: An overview for emergency managers. *Int. J. Emergency Management*, Vol. 1, No. 3, pp.278.289.

Lamond, N. & Dawson, D. (1998). Quantifying the Performance Impairment associated with Sustained Wakefulness. Unpublished paper from The Centre for Sleep Research, The Queen Elizabeth Hospital, South Australia, Woodville Rd, Woodville SA 5011, Australia.

Langsley, D., Machotka, P., & Flomenhaft, K. (1971). Avoiding mental health admission: A follow-up. American Journal of Psychiatry, 127, 1391-1394.

Lating, J. M. & Bono, SF. (2008). Crisis intervention and fostering resiliency. International Journal of Emergency Mental Health, 10, 87-93.

Lating, J. M., Sherman, M. F., Lowry, J. L., Everly, G. S., Jr., & Peragine, T.F. (2004). PTSD reactions and coping responses of East Coast and West Coast American Airlines flight attendants after September 11: A possible psychological contagion effect. Journal of Nervous and Mental Disease, 192(12), 876-879.

Lindemann, E. (1944). Symptomatology and management of acute grief. American Journal of Psychiatry, 101, 141-148.

Maiden, R. P. (2005). "Managing trauma in the South African mining industry." Int J Emerg Ment Health **7**(3): 213-217.

McCabe, OL, Mosley, AM, Gwon, HS, Everly, GS, Jr**.,** Lating, JM, Links, JM, Kaminsky, MJ (2008). The Tower of Ivory Meets the House of Worship: Psychological First Aid Training for the Faith Community. International Journal of Emergency Mental Health, Vol. 9, No. 3, pp. 171-180.

McCabe, OL, Lating, JM, Everly, GS, Jr., Mosley, A, Teague, P, Links, J, & Kaminsky, MJ (2008). Psychological First Aid Training for the Faith Community: A Model Currículum. International Journal of Emergency Mental Health, Vol. 9, No. 3, pp. 181-192.

Nusbaum, KE, Wenzel, JGW, Everly, GS, Jr, (2007). Psychologic first aid and veterinarians in rural communities undergoing livestock depopulation. Journal of the American Veterinary Medical Association, 231, (5), 692-694.

Meichenbaum, D. Stress Inoculation Training. New York: Pergamon 1985.

Millon, T. (2003). It's time to rework the blueprints: Building a science for clinical psychology. American Psychologist, 58, 949-960.

Millon, T., Grossman, S., Meagher, D., Millon, C. & Everly, GS. (1999). Personality Guided Therapy. NY: Wiley.

Murphy, S. A., Johnson, L. C., & Beaton, R. D. (2004). Fire Fighter's Cognitive Appraisals of Job Concerns, Threats to Well-Being, and Social Support Before and After The Terrorist Attacks on September 11, 2001. University of Washington.

National Child Traumatic Stress Network and National Center for PTSD. (2005, September). Psychological First Aid: Field operations guide. Washington, DC: Author.
http://www.ncptsd.va.gov/pfa/PFA_9_6_05_Final.pdf

National Institute of Mental Health (2002). Mental Health and Mass Violence: Evidence-Based Early Psychological Intervention for Victims/Survivors of Mass Violence: A Workshop to Reach Consensus on Best Practices. NIMH (NIH Publication No 02-5138). Washington, DC.

North, C. S., Nixon, S., Shariat, S., Malonee, S., McMillen, J.C., Spitznagel, K.P. & Smith, E. (1999). Psychiatric disorders among survivors of the Oklahoma City bombing. Journal of the American Medical Association, 282, 755-762.

North, C. S., Pfefferbaum, B., & Tucker, P. (2002). Ethical and methodological issues in academic mental health research in populations affected by disasters. The Oklahoma City experience relevant to September 11, 2001. CNS Spectrums, 7, 580-584.

North, C. S., Tivis, L., McMillen, J.C., Pfefferbaum, B., Spitznagel, E.L., Cox, J., Nixon, S., Bunch, K.P. & Smith, E. (2002a). Psychiatric disorders in rescue workers after the Oklahoma City bombing. American Journal of Psychiatry, 159, 857-859.

Nucifora, F., Jr., Langlieb, A., Siegal, E., Everly, GS. Jr. & Kaminsky, MJ. (2007). Building resistance, resilience, and recovery in the wake of school and workplace violence. Disaster Medicine and Public Health Preparedness, 1(Supplement_1): 33-37.

Ohbu, S., Yamashina, A., Takasu, N., Yamaguchi, T., Murai, T., Nakano, K., Matsui, Y., Mikami, R., Sakurai, K., & Hinohara, S. (1997). Sarin poisoning on Tokyo subway. Southern Medical Journal, 90(6), 587-593.

Parad, H. (1966). The use of time limited crisis intervention in community mental health programming. Social Service Review, 40, 275-282.

Parad, L. & Parad, H. (1968). A study of crisis oriented planned short-term treatment: Part II. Social Casework, 49, 418-426.

Parker, CL, Everly, GS, Jr., Barnett, DJ., & Links, JM. (2006). Establishing evidence-informed core intervention competencies in psychological first aid for public health personnel. International Journal of Emergency Mental Health, 8, 83-92.

Paul, J. & Blum, D. (2005). Workplace Disaster Preparedness and response: the employee assistance program continuum of services. International Journal of Emergency Mental Health, 7, 169-178.

Paton, D. (1994). "Disaster relief work: an assessment of training effectiveness." J Traumatic Stress, 7(2), 275-88.

Proctor SP, White RF, Robins TG, Echeverria D, Rocskay AZ (1996). Effect of overtime work on cognitive function in automotive workers. Scand J Work Environ Health *22*(2):124–132.

Raphael, B. (1986). When Disaster Strikes. NY: Basic Books. Regehr, C., Goldberg, G., & Hughes, J. (2002). Exposure to human tragedy, empathy, and trauma in ambulance paramedics. Am J Orthopsychiatry, 72(4), 505-513.

Ritchie, E.C., Friedman, M., Watson, P., Ursano, R., Wessely, S., & Flynn, B. (2004). Military Medicine, 169, 575-579.

Roy, N., H. Shah, et al. (2002). "The Gujarat earthquake (2001) experience in a seismically unprepared area: community hospital medical response." Prehosp Disaster Med 17 (4), 186-195.

Ruzek, J.I., Young, B.H., Cordova, M.J., Flynn, B.W. (2004). Integration of disaster mental health with emergency medicine. Prehospital and Disaster Medicine, 19(1), 46-53.

Sabin-Farrell, R., & Turpin, G. (2003). Vicarious traumatization: implications for the mental health of health workers? Clin Psychol Rev, 23(3), 449-480.

Salcioglu, E., M. Basoglu, et al. (2003). "Long-term psychological outcome for non-treatment-seeking earthquake survivors in Turkey." J Nerv Ment Dis, 191(3), 154-160.

Salmon, T. (1919). War neuroses and their lesson. New York Medical Journal, 108, 993-994.

Schlenger, W. E., Caddell, J. M., et al. (2002). Psychological reactions to terrorist attacks: findings from the National Study of Americans' Reactions to September 11. Journal of the American Medical Association, 288, 581-588.

Schuster, M. A., Stein, B. D., Lisa H. Jaycox,L.H., Collins, R.L. Marshall, G.N., Elliott, M.N., Zhou, A.J, Kanouse, D.E., Morrison, J.L., & Berry, S. H.

(2001). A national survey of stress reactions after the September 11, 2001, terrorist attacks. New England Journal of Medicine, 345, 1507-1512.

Selye, H. (1956). The Stress of Life. NY: McGraw-Hill.

Silver, R.C., Holman, E.A., McIntosh, D.N., Poulin, M., Gil-Rivas, V. (2002). National longitudinal study of psychological responses to September 11. 288, Journal of the American Medical Association, 288, 1235-1244.

Sharma, S. and S. Rees (2007). "Consideration of the determinants of women's mental health in remote Australian mining towns." Aust J Rural Health, 15 (1), 1-7.

Sheehan, D., Everly, G.S., Jr., & Langlieb, A. (2004). Current best practices coping with major critical incidents. FBI Law Enforcement Bulletin, 73, 9, 1-13.

Shimamiya, T., N. Terada, et al. (2004). "Effects of 10-day confinement on the immune system and psychological aspects in humans." J Appl Physiol, 97 (3), 920-924.

Stapleton, AB., Lating, J., Kirkhart, M., & Everly, GS Jr**.** (2006).Effects of Medical Crisis Intervention on Anxiety, Depression, and Posttraumatic Stress Symptoms:A Meta-Analysis. Psychiatric Quarterly, 77, (3), 231-238.

Staten, C. (1992). "Building-collapse rescue." Emerg Med Serv **21**(7): 56, 58-60.

Stein, B., Elliott, M., Jaycox, L., Collins, R., Berry, S., Klein, D., & Schuster, M. (2004) A longitudinal study of the psychological consequences of the September 11, 2001 terrorist attacks: Reactions, impairment, and help-seeking. Psychiatry, 67, 105-117

Stevens, J. L., F. J. W. Calitz, et al. (2006). "Trauma-related risk factors in mineworkers with PTSD: A prospective follow-up study." South African Journal of Psychology, 36 (2), 425-445.

Taylor, S.E. (1983). Adjustment to threatening events: A theory of cognitive adaptation. American Psychologist, 38, 1161-1173.

Tedeschi, R.G., & Calhoun, L.G. (1996). The post-traumatic growth inventory. Journal of Traumatic Stress, 9, 455-471.

Unaiza, N., Sehar, H., et al. (2007). “Post-Traumatic Stress Disorder, Depression, Fear and Avoidance in Destitute Women, Earthquake Survivors of NWFP, Pakistan.” JPPS **4** (1): 44-49.

U.S. Dept of Health and Human Services (2004). Mental health response to mass violence and terrorism. DHHS Pub #SAMA3959. Rockville, MD: Center for Mental Health Services, SAMHSA.

United States Mine Rescue Association. http://www.usmra.com/saxsewell/historical.htm Accessed April 5, 2008.

Ursano, RJ, Fullerton, CS, Vance, K, & Kao, T. (1999). Posttraumatic stress disorder and identification in disaster workers. American Journal of Psychiatry 156:353-359.

Ursano, R. J., Norwood, A. E., Fullerton, C. S. Holloway, H C. & Hall, M. (2003). Terrorism with weapons of mass destruction: Chemical, biological, nuclear, radiological, and explosive agents. In R.J. Ursano &

A.E. Norwood (Eds.), Trauma & Disaster: Responses & Management (pp. 125-154). Washington, DC: American Psychiatric Publishing.

Van Vought, M., Hogan, R., & Kaiser, RB. (2008). Leadership, followership, and evolution. American Psychologist, 63, 182-196.

Vroom, VH & Jago, AG (2007). The role of the situation in leadership. American Psychologist, 62, 17- 24.

Watson, P. Shalev, A. (2005). Assessment and treatment of adult acute responses to traumatic stress following mass traumatic events. CNS Spectrum, 123-131.

Watts, J. (1999). Tokyo terrorist attacks: Effects still felt 4 years on. Lancet, 353, 552-569.

# Appendix A

## *Training Resources in Disaster Mental Health and Crisis Intervention*

The primary non-governmental response to disasters is constituted in the form of the National Voluntary Organizations Active in Disaster (National VOAD). NVOAD is dedicated to helping disaster survivors and their communities in preparation, response and recovery.

"Members of National VOAD form a coalition of nonprofit organizations that respond to disasters as part of their overall mission. Together we foster more effective service through the four C's—communication, coordination, cooperation and collaboration—by providing convening mechanisms and outreach for all people and organizations involved in disasters" (www.nvoad.org).

As a natural corollary to being the largest and most experienced disaster response consortium in North America, NVOAD member organizations also provide disaster mental health and crisis intervention training opportunities and program development guidance based upon a "lessons learned" model (see Everly, et al, in press) having responded to the acute mental health needs from all significant disasters in North America since the early 1990s.

The primary NVOAD members contributing to the disaster mental health initiatives are The Salvation Army (www.salvationarmy.org), The American Red Cross (www.redcross.org), The International Critical Incident Stress Foundation (www.icisf.org), and The National Organization for Victim Assistance (www.nova.org). These primary agencies provide disaster mental health and crisis intervention training and are described below (adapted from Everly, et al, in press):

The Salvation Army integrates emotional and spiritual care teams within the incident command system in all disaster relief operations. Their teams consist of a diverse cadre of trained and experienced clergy, chaplains, peer support, and mental health professions who also have crisis response training from the International Critical Incident Stress Foundation or the National Organization for Victim Assistance and utilizes a truly integrated multi-component crisis and disaster intervention approach.

The American Red Cross Disaster Mental Health (DMH) program, initiated in 1989 and launched in 1992, deploys mental health professionals to assist survivors and relief workers as they cope with the

stresses encountered following disasters. The DMH program coordinates a large and diverse group of mental health professionals who work together cooperatively. Cross-disciplinary conflicts are minimized by the Red Cross generic approach to the various mental health specialties as functionally interchangeable in performing Red Cross duties.

The International Critical Incident Stress Foundation (ICISF) was founded in 1989 to provide education, training, and consultation to emergency services and disaster response organizations on critical incident stress and disaster mental health issues. The ICISF currently supports over 400 critical incident and disaster intervention teams world-wide. In 1997, ICISF was admitted as a non-governmental organization to the United Nations. The ICISF works closely with the Salvation Army, the American Red Cross, and NOVA to reduce the adverse impact of critical incidents and mass disasters primarily upon emergency and disaster response personnel in the wake of disasters. The ICISF utilizes an integrated, phase-sensitive, multi-component intervention system as recommended by numerous internationally recognized agencies and utilized by the United Nations. The intervention system emphasizes building resistance and enhancing the natural resiliency of emergency services personnel.

In the early 1980's NOVA began evaluating the impact of collective trauma on communities. The result of those evaluations was the development of a skeletal plan for a crisis response team (CRT). The goal of the CRT would be to address the needs of the community as a whole, not just the individual. A CRT consists of professionals from all over the country, typically including mental health specialists, victim advocates, public safety professionals, and members of the clergy, among others. The team for each disaster is formed in consideration of that particular community's demographics. There are three primary tasks the team performs:

1) Helping local decision-makers identify all the groups at risk of experiencing trauma;

2) Training local caregivers who are to reach out to those groups after the CRT has departed; and,

3) Facilitating individual or group crisis intervention sessions to help victims start to cope with their distress.

# Appendix B

## *Psychological First Aid*

Psychological first aid (PFA) may be defined as "a supportive and compassionate presence designed to reduce acute psychological distress and/or facilitate continued support, if necessary" (Everly & Flynn, 2006, p. 96). From this perspective, PFA may be used in a wide variety of circumstances including the stressors of daily life, in family problems, in medical emergencies, in cases of loss and grief, and even in mass disasters Everly & Flynn, 2006; Parker, Everly, Barnett, & Links, 2006).

In 1952, F. C. Thorne wrote the following, "In our opinion, … preoccupation with depth psychology [psychotherapy] has had a very detrimental effect in causing us to overlook presenting complaints which may be very distressing to the client and about which he urgently wishes us to do something…Prophylactically, it is probable that many disorders could be nipped in the bud if prompt attention could be given to germinating seeds which may later grow into tall oaks…Diagnostically, one of our problems is to identify these emergency situations so that we can discriminate what needs to be done immediately…Therapeutically, much will be gained if the client can be made more comfortable even though no deep cure can be effected by first aid methods" (Thorne, 1952, p. 210).

In 1954, the American Psychiatric Association (APA, 1954) published the monograph entitled *Psychological First Aid in Community Disasters* (APA, 1954). That document therein defined and argued for the development of an acute mental health intervention referred to as "psychological first aid" (PFA). This early exposition noted, "In all disasters, whether they result from the forces of nature or from enemy attack, the people involved are subjected to stresses of a severity and quality not generally encountered…It is vital for all disaster workers to have some familiarity with common patterns of reaction to unusual emotional stress and strain. These workers must also know the fundamental principles of coping most effectively with disturbed people. Although [these suggestions have] been stimulated by the current needs for civil defense against possible enemy action… These principles are essential for those who are to help the victims of floods, fires, tornadoes, and other natural catastrophes" (APA, 1954, p. 5).

In the first truly integrative disaster mental health text *When Disaster Strikes*, Beverley Raphael noted, …in the first hours after a disaster, at least 25% of the population may be stunned and dazed, apathetic and wandering—suffering from the disaster syndrome—especially if impact has been sudden and totally devastating…At this point, psychological first aid and triage…are necessary…" (Raphael, 1986, p.257).

Raphael (1986) suggests that psychological first aid consists of numerous interventions, but among them are: comfort and consolation, physical protection, provision of physical necessitie, reuniting victims with friends and family, allowing emotional ventilation, the provision of behavioral and/or emotional support, especially during emotionally taxing tasks, utilization of acute social and community support networks, triage and referral for those in acute need, and referral to sub-acute and on-going support networks.

More recently, the Institute of Medicine (2003) wrote, "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 [disasters] 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" (IOM, 2003, p. 4-5).

While relevant authorities recognize the importance, and recommend the practice, of psychological first aid, there currently exist few, practical guidelines on how it may be implemented. Guidelines for the training and practice of "psychological first aid" are available from The National Child Traumatic Stress Network, National Center for PTSD (www.nctsn.org), and from The Johns Hopkins Center for Public Health Preparedness, The Johns Hopkins Bloomberg School of Public Health (www.jhsph.edu/preparedness). The Johns Hopkins RAPID-PFA model of psychological first aid (see Everly, 2007) was developed expressly for those with litlle or no prior mental health training.

In a seminal approach to structured PFA training, McCabe and his colleagues at Johns Hopkins University (McCabe, Mosley, Gwon, et al, 2008; McCabe, Lating, Everly, et al., 2008) have successfully trained leadership within the faith community to provide PFA to its constituency. Such training would appear to be especially useful in isolated or rural settings where there is a paucity of formal mental health services available.