

# Surviving Field Stress for First Responders



Photo: Army Corp of Engineers

Agency for Toxic Substances and Disease Registry

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## Preface

This training manual provides an introductory overview of the effects that psychological stressors associated with field work has on the mental and physical health of those called to respond to emergencies. The advice and the resources given are based on the best science to date and this book will be updated as the knowledge base on the prevention of stress-related health conditions advances. However, the information contained herein is no substitute for a physician's advice regarding health conditions.

## Purpose

This book provides an overview of the physical, emotional, and mental stressors first responders face when called to a *technological* disaster or terrorist attack. It gives practical coping techniques and lists resources for dealing with stress. The purpose of this manual is to help the responder and those they assist be prepared for the stresses of 21st century disasters.

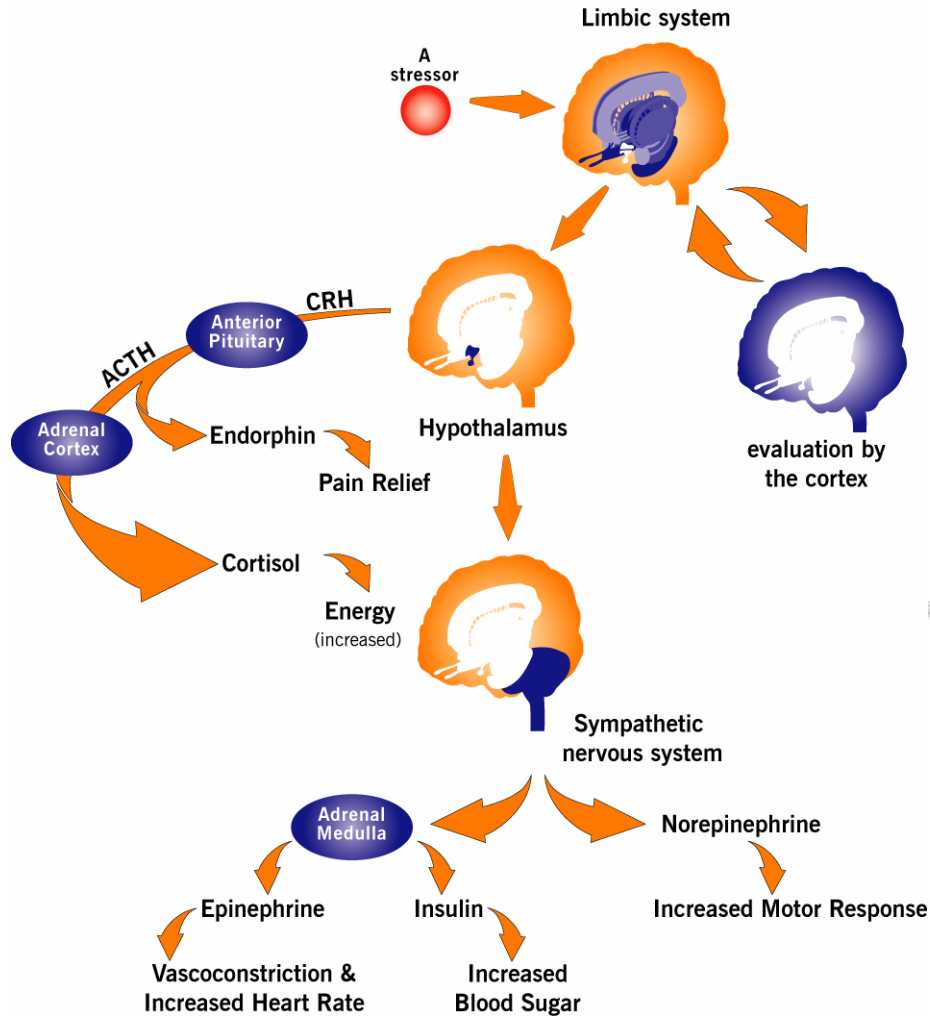
DRAFT

## **Section I. Stress 101A**

### **Definition of Stress**

Psychological stress is a normal reaction to a threat or disturbing change in the environment. Stress produces both psychological and physical responses. Together, these responses lead to a biochemical cascade which sets off a *flight-flight or freeze* reaction by the body. (See Figure 1 for a fuller description)

All animals, from simple reptiles to complicated humans, have this flight or fight reaction. It is a survival mechanism that prepares all animals to run or fight for their lives. A first responder on a call could experience increased heart rate and rapid breathing, as the body also redirects blood from the guts to the leg and arm muscles. These effects of the fight-or-flight response could cause indigestion, rapid breathing, and heart pounding; but the response also brings about a general increase in physical energy and strength.



**Figure 1. The Stress Response or Flight/Fight or Freeze Reaction.**

Once a change (noise, sound, smell, pain, etc.) is noticed and confirmed as a threat by the parts of the limbic system—the brain’s alarm center. The limbic system then directs the sympathetic nervous system (SNS) to alert the body. The SNS does this by stimulating the adrenal medulla, located near the kidneys, to release the adrenaline-like compounds, **epinephrine** and **norepinephrine**, into the bloodstream. The limbic system also tells the hypothalamus—the control center of the brain—to signal the tiny pituitary gland near the brainstem to create other chemical signals to help further activate the body. As a result of action on the pituitary, the adrenal cortex releases **cortisol**, an important stress hormone. The release of all these chemicals causes important changes in the body’s ability to respond to threats such as increased energy, heart rate and blood sugar; increased arousal and pain relief. (Charney, 2004)

## Sidebar:

The fight-or-flight reaction also has a “freeze” component to it. The freeze response is best illustrated by the “deer in the headlights” syndrome. The purpose of the freeze reaction, which is bad if you are a deer on a road at night, is an escape mechanism. In the wild, antelopes will freeze when seized in the jaws of a cheetah. Rather than biting them further, the cheetah will eventually drop the still prey and go off in search of more. The freeze reaction lets the antelope, if not too injured, jump up and run away. People, especially children, can also exhibit this freeze response, especially when they are ambushed or suddenly terrorized. A recent example of this occurred during an ambush in the U.S.-Iraq war as this eyewitness account reveals,

“We were going through this town and all of a sudden we got ambushed,” Lopez said. “I was really scared. You could just hear bullets flying by. They were firing artillery also. And it’s just scary. I never felt that much fear in my life. Ever... When I got hit [in the shoulder] it felt like somebody just pushed me and it hurt at the time,” Lopez said. “My whole body went asleep. I couldn’t do anything. I couldn’t move anything. I felt like I was paralyzed.”

—(from ABC news, copyright permission granted)

The **stress response** (fight-or-flight/freeze) is a normal reaction that leads to an increase in arousal and ability to deal with threat. In the absence of a continued threat, the body relaxes and goes back to its normal state of tension. Small doses of daily stress are not unhealthy at all. They are part of life and the body is adapted to handle them. In times of extreme stress, however, this stress response can become turned on at all times, with no relaxation. This can have serious physical and psychological consequences. There are ways to turn off the stress response. One purpose of this training manual is to teach you various ways to handle psychological and physical stress.

## Stress Spectrum - Acute, Chronic, and Traumatic Stress

Different categories of stress exist. Acute and chronic stress differ by the time span in which they occur, e.g., short or long-term. And, also, there exists a stress spectrum which differs in the intensity of the stimulus causing the stress and the possible responses to it- from mild everyday stress, to distress, and at the extreme end, traumatic stress.

**Acute, or short-term stress** is what happens when we respond immediately to a sudden danger. A near miss in traffic is an example of an acute stress. An oncoming car is the threat and we respond by getting out of the way; little time separates stressor and response.

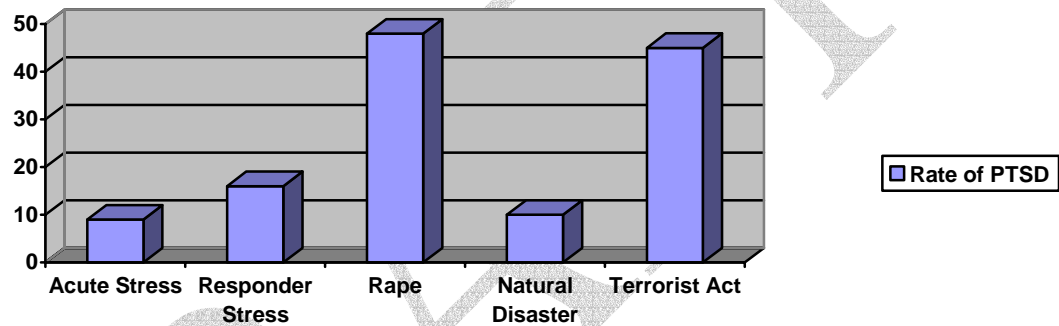
**Stimulus → Appraisal of Threat → Response**

**Chronic, or long-term stress** occurs over a long period and does not present an easy or quick solution. The day-to-day hassles of life, a bad job, or clogged traffic can be sources of chronic stress. Chronic stress tends to have more negative effects on health than acute stress because it stimulates long-term flight-or-flight reactions that can knock the body's systems out of balance. Severe chronic stresses, such as an abusive childhood or a long-term illness, are called **adversity**.

**Table 1. Symptoms of Chronic Stress**

<b>Thinking</b>	<b>Emotions</b>	<b>Behavior</b>
Short attention span	Mood swings	Impulsiveness
Poor concentration (mind drifting off of the subject)	Agitation	Insomnia or hypersomnia
Problems with memory (forgetfulness)	Irritability	Inertia
Difficulty with decisions	Insecurity	Dependency
Slowed thinking	Apprehension	Arguing
Inability to see alternatives	Depression	Unproductiveness
Confusion	Anxiety	Pacing

A **traumatic event** is a very intense stressor which is outside of experience of everyday life. Examples include being in a tornado, fire, or being subjected to violence, combat, or terrorist attack. In its *Diagnostic and Statistical Manual of Mental Disorders*, DSM-IV-TR, 4th edition, the American Psychiatric Association defines a traumatic event as life-threatening situation that it evokes feelings of intense fear, horror, or helplessness.(American Psychiatric Association, 2000) Traumatic events can leave both survivors and responders with physical and psychological injuries requiring treatment. Pre-event training and appropriate after care can help ease the stress reactions caused by these extraordinary events.



**Figure 2. Rates of Post-Traumatic Stress Disorder (PTSD) by Event.**

As the stress of the event increases, so do the rates of stress-related disorders, such as PTSD. (Kaplan and Sadock, 1995; Fullerton et al., 2004; Foa, 1997; Burkle,1996; North et al., 2002)

A **disaster** is a traumatic event that affects a whole community or communities. This definition of a disaster comes from the Substance Abuse and Mental Health Services Administration (SAMHSA):

An occurrence such as a hurricane, tornado, earthquake, explosion, hazardous materials accident... that causes human suffering or creates collective human need that requires assistance to alleviate.

Disasters have also been defined as situations of massive, collective stress (Burkle, 1996).

## Effects of Disaster Stress on Psychological Health

Scientists and clinicians have studied the effects of stress from natural disasters on survivor's psychological and physical health since the 1940s. They recognized that some people who have been exposed to various natural disasters could develop psychological injuries, such as major depression, chronic anxiety, and post-traumatic stress disorder.

As research on the psychosocial effects of disasters progressed, factors affecting the psychological injury rate became better known. One of the main determinants is the individual's experience during the disaster:

- Did they suffer first- or secondhand from the disaster?
- Did they suffer personal losses?
- Were they personally injured or witness the suffering of others?

Another important factor is the social response to the disaster. How widely is the social network disrupted and how quickly does outside support and aid arrive for the victims?

On average, 90% of people who live through a *natural* disaster will suffer only transient—or no—emotional effects from it (Burkle 1996). Why is this? Because, in collective disasters, rather than individual misfortunes, social support provides important resources for coping. Also, natural psychological resilience protects people after sudden disasters. It is normal to be sad and emotionally distressed in the aftermath of a natural disaster. But, most people rebuild their internal and external world fairly successfully, relying on family, friends, community, and their own coping skills.

**Technological, or human caused disasters,** are a fairly new category of disaster. This type of disaster includes plane crashes, building collapses, hazardous material (HAZMAT) incidents, and intentional releases of chemical, biological, and nuclear materials by terrorists.

People who live near a hazardous waste site may also chronically experience the stress of technological disasters. Technological disasters that leave widespread contamination pose unique stresses for victims that may make it harder for them to adapt to, in comparison



with victims of natural disasters. A contributing factor may be that in natural disasters, no one is to blame, while blame may be assigned for malfunctions in human-made systems. Additional stressors that can occur with technological disasters include fear of invisible chemical or radiological exposure, or if exposed, worry and uncertainty regarding possible future health effects.

In addition to direct health effects, exposure or possible exposures to toxic substances can cause people to experience considerable worry and uncertainty. There have been a number of studies of the levels of psychosocial stress in communities affected by exposures to toxins. These studies show a pattern of long-term sub clinical stress in affected populations (Baum and Fleming, 1993). This is because contamination from a technological breakdown can take years to decades to clean up. These types of disasters may damage the social fabric because of the concern over responsibility and the number of agencies, communities, and companies involved in the cleanup. The social conflict that can ensue during cleanup can reduce the available social support for victims. Such support is vital for recovery from disasters (Couch and Kroll-Smith, 1991).

**Table 2. Psychosocial Responses of Communities to Environmental Contamination**

Fear and uncertainty over the possible health effects of exposure
Feeling a loss of control over the present and future
Anger over the loss of security and safety within the community
Confusion brought about by trying to understand various government documents
Community conflict over who is to blame and what actions to take
Concerns over economic losses (e.g., property devaluation, doctor bills, and business losses)
Feelings of being stigmatized and isolated because of living near a hazardous waste site
Frustration of dealing with bureaucratic agencies
Frustration of being accused of “overreacting”

**Source:** From ATSDR Report of the Expert Panel Workshop on the Psychological Responses to Hazardous Substances (ATSDR 2000).

**Terrorist attacks** result in greater psychological casualties than natural disasters or technological accidents. Deliberate cruelty and violence by others is the most damaging of all types of stress (Lifton 1991). A recent study of the Oklahoma City bombing found that 45% of the people at the site had a psychological injury and 30% had bomb-related post-traumatic stress disorder (North et al. 2002).

**Sidebar.**

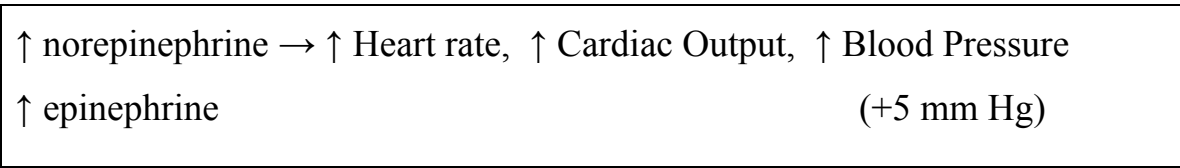
“When you’ve worked as long as I have, you get to see all kinds of scenes. I even went to the Kobe earthquakes. But the Tokyo sarin attack was different. That was really and truly hell.”

—Minoru Miyata, TV Tokyo (Murakami H. 2001)

**Effect of Stress on Physical Health**

Psychological stress is one of many factors besides diet, exercise, genetics that affect physical health. **A normal load of daily stress does not significantly degrade health.** Heavy burdens of chronic stress or intense bursts of traumatic stress can over time negatively impact health. The way stress interacts with physical health is subtle.

One of the areas where this interaction is being researched is the effect of stress on the cardiovascular system. Research shows that acute stress may serve as a trigger for a heart attack in people with pre-existing coronary artery disease (CAD). For example, someone with pre-existing CAD is more at risk of a heart attack following a sudden emotional upset than someone with CAD but without the sudden emotional upset (Sheps DS et al. 2002).



**Figure 3. Cardiovascular Stress Response**

Although acute stress may trigger a heart attack in those predisposed to heart disease, researchers believe that the chronic effects of stress on the heart are what can lead to increased rates of cardiac illness and death after a myocardial infarction. In 1994, Frasure-Smith et al. conducted a study showing that “major depression in patients hospitalized following an MI [myocardial infarction] is an independent risk factor for mortality at 6 months. Its impact is at least equal to that of left ventricular dysfunction (Killip class) and history of previous MI.” According to this study, if a patient has depression post-MI, their risk ratio for death is 4 times that of nondepressed, post-MI patients.

The exact mechanisms by which a stress-related disease like depression affects death rates post-MI is not yet fully known. One leading hypothesis is that depression leads people to neglect medication and self-care post-MI. The other two hypotheses involve the interaction of psychological and physical factors that come together to alter the function of the circulatory system. Depression alters the function of the autonomic nerves that serve to regulate the heart’s rhythm (Frasure-Smith 1993).

A more recently tested idea is that depressed patients experience changes in platelet function. The theory is that the chemical changes involved in major depression may cause platelets to form clots more easily than normal. Platelets are involved in how well the blood clots and alterations in their ability to clot can increase the risk of heart attack. The Sertraline Anti-Depressant Heart Attack Randomized Trial (SADHART) evaluated the effects of selective serotonin reuptake inhibitor (SSRI) antidepressants given to depressed patients who had just suffered an MI. That treatment resulted in decreased clotting ability in platelets and increased patient survival (Serebruany VL et al. 2004). Stress-related chemicals, such as norepinephrine, can also irritate the tissues that carry the heart’s electrical activity. That can cause our hearts to beat irregularly if we have underlying heart disease (Krantz and McCeney 2002).

Although hypertension has other risk factors, chronic stress can contribute to hypertension in people who have the right genetic predisposition. The risk of infection is

higher when we are suffering from chronic stress. That is because of the immune system is suppressed due to the long-term stress-related increase in *cortisol* release. Autoimmune disorders, such as rheumatoid arthritis, can flare up during stressful periods. The gastrointestinal system is not immune to the effects of chronic stress, either; the condition called *irritable bowel syndrome* is related to psychological stress. Psychological stress is thought to be involved in increasing susceptibility to acute attacks in asthmatics.

Stress Effects on the Body	
Short-term	Long-term
Diarrhea	Chronic fatigue
Constipation	Coronary artery disease
Acne	Irritable bowel
Migraines	Depression
Lack of sleep	PTSD
Hives	
Trigger for acute MI	

**Figure 4. Physical Health Effects of Stress**

## Protective Factors from Stress Reactions

People are not helpless against the effects of psychological stress. For one thing, there are ways to turn off the fight or flight response and to relax. We will talk about these specific stress management techniques later. Second, we all possess innate stress buffers. Stress buffers include such things as: coping skills, resilience, social support, and self care.

### Coping Skills

Coping skills are automatic mental ways in which we deal with stress. Coping styles color the way we think and therefore feel about a situation. There are three main types of coping. Some types automatically fit a certain situation better than others.

The first coping type is called **appraisal focused coping**. This coping style involves seeking out patterns and interpreting the meaning in events. At best, this involves the use

of logical analysis and mental preparation. At its worst, this type of coping can involve denial or not thinking about things when you need to.

The second type of coping is **problem-focused coping** which involves finding practical solutions to problems. At best, this involves seeking information and problem solving, and taking action to solving problems. However, this way doesn't work well and in fact may cause frustration if applied to chronic, not easily solved situations.

The third type of coping is **emotion-focused coping** which means regulating one's emotions during a stressful situation. At best, this works to control emotions under stress; at worst, leads to resigned acceptance instead of taking actions to change things when they can be changed.

Everyone has their own default, automatic coping style. First responders tend to cope by seeking to understand situations, gaining mastery through individual and interpersonal action and seeking to extract philosophical meaning from situations. (McCammon, 1988)

It is important to know that coping skills can be learned and are taught by work with counselors and psychologists. So, if you tend to use just one kind, you can learn others and come up with a more flexible coping strategy.

### **Resilience**

“Resilience is a universal human capacity to face, overcome, and even be strengthened by experiences of adversity.” —International Resilience Project

### **Sidebar:**

#### **Resilience Factoid**

It is a sign of resiliency to seek help when in trouble. It makes one vulnerable to be afraid to ask for help (Adshead 2000).

Resilience was originally described in the 1960s in children who had come from very troubled backgrounds. These children had been poor and abused. Yet, they had gone on to be very productive citizens. The pathologic models of the time predicted that no one could overcome adversity of this type. So, it fascinated the psychologists of the day. They discovered that these children were gifted in the way they dealt with people. The resilient children reached out to teachers, nonabusive family members, or neighbors to mentor them so they could grow and adapt normally in spite of their disadvantaged backgrounds. Since that time, the elements of resilience have been described further and it is now believed that you can teach resilience to adults.

**Table 3. Seven Components of Adult Resilience**

Insight	Relationships	Humor
Independence	Initiative	Morality
	Creativity	

Source: (Wolin S and Wolin S. 1993, p.67–76).

### Resources

1. The Road to Resilience. Brochure available from the American Psychological Association. 1-800-964-2000 or [www.helping.apa.org](http://www.helping.apa.org).
2. International Resilience Project. See their Web site at URL: <http://www.resilnet.uiuc.edu/library>.
3. School Violence Prevention. Characteristics of resilient individuals. US Department of Health & Human Services, Substance Abuse and Mental Health Services Administration, Center for Mental Health Services. Available at URL: <http://www.mentalhealth.samhsa.gov/schoolviolence/part1chp8.asp>

### Social Support

On both an individual and group level, social support forms an important protection from stress for both adults and children. For individuals, “in more than 100 empirical studies, social support has been tied to reduced health risks of all kinds...” (Taylor, Dickerson,

Klein 2002). Conversely, a study found that having few social contacts resulted in a 2.75 greater risk of death after a first heart attack than in people with greater social support (Welin, Lappas, Wilhelmsen 2000). Long-term relationships, particularly a good marriage, has been found to have a positive effects on both men's and women's health. (Lasswell, 2002)

There are many theories as to why social support is so important. Some say it is simply because knowing people provides practical, problem solving assistance. Yet, if personal resources and socioeconomic status are factored out of studies, emotional support alone has moderating effect on stress and a very positive effect on human health. Various academic centers are working on the chemical cascade by which the human brain responds to positive social interactions.

### Sidebar

#### **Interesting Factoids about Social Support**

- Men may be more responsive to social support than women even though women tend to seek support more often than men and are more negatively affected by its lack.
- It's not just the number of relationships you have but whether or not they are positive that count as social support. For example, it has been found that an unhappy marriage, although harmful to both genders, has more of a negative effect on women's mental and physical health. (Lasswell, 2002)

### **Exercise**

The physically harmful effects of chronic stress can be reduced by moderate exercise (McEwen 1998). A 1996 study found that people who aerobically exercised had lower heart rate, blood pressure when faced with acute stress (Anshel 1996).

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## Section II. Field Responses and Stress

### Predeployment Preparation

Predeployment training is crucial. It is probably impossible to be too prepared for the field. Information is the best “cure” for anticipatory stress. Pre-incident training can range from on-the-job safety, to technical skills, to human elements training (i.e., helping emotionally distressed victims during a response). Disaster orientation is a basic introduction to the elements of field work. **Stress education** involves learning how to recognize normal stress reactions and simple skills and rules for managing stress during a response. It includes learning post-response steps for recovery.

Learning to recognize and manage what stressors you can reduces your chances of being negatively affected by stress. To make informed management decisions, field supervisors need an awareness of all types of stressors responders face and the possible toll they can take on personnel.

### During the Disaster

#### Disaster Stressors

First responders to disasters are exposed to physical and mental stresses that combine and interact. Psychological and physical stressors can add up to produce a **threshold effect** that overwhelms and degrades responder alertness and strength. This has important personal safety effects. To increase safety during a response, first responders and their managers need to learn how to recognize all stressors, whether physical, mental, or emotional.

#### Physical Stresses

##### Heat

Working in a hot environment—especially when wearing personal protective equipment (PPE), as for a HAZMAT incident—can put responders at risk for heat-related disorders.

All responders should be familiar with the signs and symptoms of **heat stroke** and **heat exhaustion**, the most serious of the heat-related illnesses.

Symptoms of heat exhaustion include heavy sweating, muscle cramps, fatigue, weakness, paleness, cold or clammy skin, dizziness, headache, nausea or vomiting, and fainting. If unrecognized and untreated, heat exhaustion can progress to heat stroke. The symptoms of heat stroke include high body temperature (oral temperature  $>103^{\circ}\text{F}$ ); red, hot dry skin with no sweating; rapid pulse; throbbing headache; dizziness; nausea; confusion; disorientation; and coma. *Onset of heatstroke is a medical emergency. Heat exhaustion and heat syncope (fainting) lasting longer than 1 minute with signs of mental changes also need medical intervention.* These signs and symptoms are important to know because mental changes, such as disorientation and confusion, are not only signs of psychological distress but of physical distress. (Donoghue et al., 2003) In hot working conditions, coworkers and supervisors should make sure a mentally confused responder is not medically ill with heat stroke or exhaustion.

### **First Aid for Heat Exhaustion and Heat Stroke**

If you see any of these above signs of heat exhaustion or heat stroke, you may be dealing with a life-threatening emergency.

- Have someone **call for immediate medical assistance** while you begin cooling the victim.

Then, do the following:

- Get the victim to a shady or air conditioned area.
- **Cool the victim rapidly using whatever methods you can.** For example, immerse the victim in a tub of cool water; place the person in a cool shower; spray the victim with cool water from a garden hose; or sponge the person with cool water. If the humidity is low, wrap the victim in a cool, wet sheet and fan him or her vigorously.
- Monitor body temperature, and continue cooling efforts until the body temperature drops to  $101\text{--}102^{\circ}\text{F}$ .

- If emergency medical personnel are delayed, call the hospital emergency room for further instructions.
- Offer fluids. Do not give the victim alcohol to drink.
- Get medical assistance as soon as possible.

(NIH, 1989)

**Note:**

All responders working in situations that require a minimum of Level C protection are required to have a health and safety plan and a safety officer onsite to make sure that hyperthermia is avoided.

<b>Resources</b>
<p>1. National Center for Environmental Health, Centers for Disease Control and Prevention. Extreme heat: a prevention guide to promote your personal health and safety. Atlanta: US Department of Health and Human Services. Available at URL: <a href="http://www.bt.cdc.gov/disasters/extremeheat/pdf/heat_guide.pdf">http://www.bt.cdc.gov/disasters/extremeheat/pdf/heat_guide.pdf</a>.</p>

**Cold**

**Hypothermia** occurs due to a combination of factors, including air and/or water temperature, wind, duration of exposure, clothing, age, and health. Hypothermia develops slowly and subtly. Some of the early warning signs include the following:

- shivering that progresses to uncontrollable shivering,
- development of mental dullness,
- slurred speech,
- lethargy,
- puffy face, and
- cool skin.

<p>Signs of advanced hypothermia that needs immediate medical treatment include the following:</p>
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- |   |
|---|
| <ul style="list-style-type: none"> <li>• uncontrollable shivering that goes into no shivering,</li> <li>• pale skin,</li> </ul> |
|---|

- no movement, and
- persistent feeling of cold even when warming interventions are started.

Anyone suspected of being in the early stages of hypothermia needs to be pulled off the response and checked out medically.

Follow these guidelines to help prevent hypothermia:

- Dress in layers to keep out the cold
- Wear waterproof boots and gloves
- Always wear a hat outdoors
- Eat snacks of high calorie food frequently while outdoors to keep your body generating heat
- Drink warm liquids
- Take frequent rest breaks
- Use the buddy system to check for symptoms of hypothermia so that it doesn't creep up on you (Spoth, 2004)

**Chilblains** are red, itchy, burning welts on the skin—especially the fingers and toes—caused by cold.

**Immersion foot (trench foot)** is caused by cold and exposure to water. Good footwear that prevents the responder from working in wet boots and socks is the key to prevention of trench foot.

**Frostbite** is the actual freezing of tissue caused by exposure to extreme cold. Proper precautions include wearing adequate protective clothing and limiting exposure to cold to a reasonable duration.

## Resources

1. Curtis R. The backpacker's field manual, a comprehensive guide to mastering backcountry skills. New York: Random House; 1998.

## **Hydration**

Your body loses moisture when you work in hot environments. Losing 1.5% of body weight in fluid results in a higher heart rate and a greater tendency for body temperature to rise. When dehydration is > 2.5% of body weight, extreme fatigue is a noticeable symptom and the early signs of heat exhaustion occur.

Remember, drinks with caffeine and alcohol have a **diuretic** effect (i.e., more fluid is lost in urine than is taken in by the drink). These types of drinks should not be the only kind consumed before, during, or after a response. Dehydration puts you at risk for heat exhaustion. Proper electrolyte balance is also important. Drinking pure water or pure sports drinks alone to replenish the loss of fluid may shift electrolyte (K<sup>+</sup>, NA<sup>+</sup>) balance. Occupational specialists recommend a balanced intake of half water, half sports drink formula that maintains proper electrolyte balance during re-hydration after activity.

## **Sleep**

Sleep is part of the body's natural **circadian rhythms**. Circadian rhythms are the 24-hour cycles of wake-sleep, hormonal secretion, and neurotransmitter fluctuations linked to the light-dark cycles of the sun. When sleep is disrupted, the body's balance is disturbed causing mental and physical effects. (Akerstedt and Nilsson, 2003)

Sleep research over the past decade has shown that after 17 hours without sleep, thinking, psychological reactions, and motor skills decline to a level equal to someone with a blood level alcohol of 0.05%. After 24 hours without sleep, thinking, psychological reactions and motor skills are equal to someone with a blood alcohol level of 0.1% (legally intoxicated).

Studies of emergency room physicians have found that after long hours, physicians lose their ability to assimilate new information and are slower to perform procedures such as intubations; but they do not lose any decision making capability based on rote knowledge, experience, and skills. (Rollinson et al., 2003) An electroencephalogram

(EEG) sleep study of long-haul truck drivers found that unless they slept at least 5 hours before a 10-hour driving trip, they suffered from “microbursts” of sleep at the wheel (Mittler et al., 1997). Ironically, the experienced first responder may be making reasonably good decisions after 24 hours on the job because of previously acquired skills and knowledge, but may be more at risk when driving home due to slow reaction time and tendency to fall asleep at the wheel.

**Table 4. Effects of Sleep Deprivation and/or Night Shifts**

Level of alertness varies as concentration waxes and wanes
Slow thinking under pressure leads to increased mistakes
Short-term memory decreases
Tasks start well, but ability to complete tasks declines rapidly
People cling to old familiar solutions that may be ineffective
More tasks are judged nonessential and action is delayed
Bursts of micro-sleep occur more frequently as more sleep is missed
Remaining alert requires more effort
The risk of mistakes, accidents at work and car crashes increases as time without sleep passes
People do NOT realize that lack of sleep impairs their performance; they think they are fine

Adapted from Rogers AE, 2002. [Copyright permission granted]

## **Mental Stresses**

### **Information**

Field responders must make quick decisions under pressure, frequently with not enough, inaccurate or ambiguous information and with very serious consequences for a wrong decision. Decision making with less than optimal information is a very potent stressor for first responders.

## Organizational Demands

Most organizational demands on site relate to how well the responders duties are outlined and understood. During the response, there must be clear lines of authority and leadership both between the different agencies involved and within the responder's agency. Most emergency responders are being trained in the **incident command system**, a standardized emergency response organizational structure.

A **short, prebriefing**—every day for all responders before they go on site—is a useful tool. During the prebriefing, safety warnings and equipment are issued, job duties are assigned, and information about conditions on site are given. Establishing clear roles and a providing even a little information about on scene conditions can go a long way toward reducing on-site stress. If important new information becomes available during the response, immediate two-way communication between the field and command staff is essential. Additionally, short informal debriefing at the end of the day can be useful. It helps to share experiences on site and come to a common understandings of on site incidents.

### Resources

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2. Occupational Safety and Health Administration. 1997. Hospitals and community emergency response—what you need to know. Washington, DC: US Department of Labor. Available at URL: <http://www.osha.gov/Publications/OSHA3152/osha3152.html>.

## General Disaster Related Stressors

Disasters are not just big emergency calls. They are different, new situations and present unexpected stresses emergency responders may not anticipate. Disaster research over the past three decades have revealed the following lessons that can turn the most careful disaster plan upside down and make the real disaster nothing like the drill (Auf der Heide 1989; Jackson 2002; Manning and Goldfrank 2002).



## **Disaster response lessons**

### **Things that can and do go wrong**

1. Casualties are transported by private car to nearest hospital rather than to predesignated triage areas, leaving triage areas idle while nearby hospitals are overwhelmed.
2. Agencies receive a massive in-pouring of unnecessary relief supplies.
3. Communications become snarled—people may call from all over the world to check on family and friends, jamming local lines; police and fire may not be able to communicate due to use of different frequencies; or different jurisdictions in a multi-county response may have incompatible equipment.
4. Overwhelming numbers of volunteers and amateur responders may come to a scene and coordination difficulties with all these volunteers occur.
5. Especially in large HAZMAT episodes, stocks of personal protective equipment (PPE) may be inadequate.
6. Command structures can be confused in a multiple agency response where federal, state, and local agencies are working together for the first time.

## **Lessons from Specific Types of Technological Disasters**

Incident-specific problems you might anticipate includes:

### **For Chemical (HAZMAT) Incidents**

1. Lack of training to deal with chemical agents
2. Lack of proper PPE for use during HAZMAT incidents
3. Responder concerns—or inappropriate lack of concern—about latent and long-term health effects from exposures to chemicals during a response

### **For Biological Incidents**

1. Lack of training to deal with biological agents.
2. Concerns about the infectiousness of the agents.

### **For Terrorist Incidents**

Differences from normal routine responses include:

1. Length of the response—The response to 9/11 lasted for months. The normal equipment (masks, bunker equipment, respirators) used for firefighting and emergency response was not suited to long shifts and the long duration of the response. (Jackson et al, 2001)
2. Multi-site events—Both the 9/11 response and the anthrax attacks involved multiple sites, multiple jurisdictions and agencies, and many types of responders.
3. Level of violence—The violence associated with terrorist incidents has increased in the 21st century. It also includes the possible deliberate secondary targeting of responders.

## **Violence**

EMS personnel and other first responders can be the recipients of public abuse and violence. A 1998 survey of the Albuquerque fire department showed that 90% of the firefighters and EMTs employed there “experience abuse, assault, or a violent act directed toward them by a patient, family member, or bystander.” (Pozzi, 1998)

Strategies to prevent violence against first responders are in their infancy. Many strategies involve security measures. Some strategies involve teaching first responders ways to avoid becoming the target of violent behavior and how to handle it if it does occur. The benefits of these classes appear to be relatively short term, however (Fernandes et al. 2002).

## **Preventing Violence**

It usually takes a person with certain risk factors and a situational trigger coming together to cause violence. First responders can use knowledge of these risk factors and triggers to make an on-scene risk assessment.

**Underlying risk factors + A situational trigger = Violent act**

### **Underlying Risk Factors**

- *Physical stresses* in a person, such as hypoxia, head injury, heat, electrolyte imbalance, drug or alcohol intoxication, or exposure to chemical toxicants
- *Psychological states*, such as paranoid psychosis, dementia, antisocial personality, or past history of violence

### **Situational Triggers**

- *Physical stresses* in the person, such as hunger, thirst, pain, fatigue, or lack of sleep
- First responder violates the person's *personal space* (which varies by culture)
- First responder is perceived to have shown *disrespect* to the person
- *Excessive noise*
- *Psychological states*, such as anxiety, fear, anger, frustration, and uncertainty.

Adapted from: The prevention and management of aggressive behavior program. In: Fernandes CMB, Raboud JM, Christenson JM, Bouthillette F, Bullock L, Ouellet L, et al. The effect of an education program on violence in the emergency department. *Ann Emerg Med* 2002;39(1): 47–55. [Copyright permission granted]

## **Emotional Stresses**

### **Family/Personal Issues**

Responders on-site will need to call home frequently to check up and receive and give emotional support. New roles for family members like bill paying can result in bounced checks or delinquent notices if no family preplanning occurs.

A pre-arranged responder and family support network needs to be in place *before* a disaster response occurs. This support system should be designed with the particular culture of the fire department or response unit in mind. In the past, most support has been peer-to-peer and informal, which has generally served well. But, as was discovered in New York after 9/11, a large-scale incident can overburden the traditional, informal social network.

Consultants evaluated how the New York Fire Department could enhance its preparedness for future disasters, post-9/11 (McKinsey, 2002). Some suggestions that the McKinsey report gave regarding how to set up such a support system included: have a planning and oversight committee for the support services be composed of department personnel and other personnel familiar to and with the response unit. This committee would set up the necessary infrastructure (contact lists, peer support teams, information on specialized service providers in the area). This committee would also define and supervise the provision of support services so that only predesignated providers will have access to responders and their families. Finally, this committee would seek input from the responder, their families, and the union (if one is involved).

Preplanning aids familiarity and acceptance of how aid is provided and who is provided by. It prevents responders post-disaster from being assailed by well meaning but unfamiliar providers or as Dennis Smith put it in his book, *Report from Ground Zero*, “roving bands of shrinks.” (Smith, 2002)

## Resources

1. McKinsey Report, Increasing the Fire Department of New York preparedness, [http://www.ci.nyc.ny.us/html/fdny/html/mck\\_report](http://www.ci.nyc.ny.us/html/fdny/html/mck_report)

### Working With Injured/Dying

Some of the most difficult things about working with the victims of a disaster that interviews with firefighters have revealed are feelings of not being able to help enough, of being overwhelmed by the number of the injured or the magnitude of injuries, fear of the unknown, and of identifying with the victim and their suffering. (Fullerton et al., 1992)

Another cause of very severe distress occurs when they are unable to rescue a victim, especially a child or a friend or a co-worker. Be unable to help when you are a helper may be the worst stress of all.

However, there are factors that may prevent the stresses which occur in these situations. **Social support** of the members of the group for each other strengthens each person. Faith in **good leadership** can help a group through a difficult time. **Pre-event training** makes it easier for each person to perform their job during a disaster. **Customs and rituals**, such as funerals and memorials, set time and space in order after the disruptions and chaos of accidents.

According to Joan Halifax, leader of Being with Dying project,

*“...Death is, in no uncertain terms, intimate and inevitable. Being with dying means that we bear witness to one of the most natural events of living. Learning to hold to truth, compassion, and openness in the face of dying is so very important to all of us, but most especially those whose lives are being wound in the immediate experience of death...Being with a dying person can be a very inspiring process. It can also be very complicated, very troubling. Dying calls for truth in a more fundamental way than any other experience we human beings go through...”*

*Over the past twenty years, I have trained many people in how to work with the dying process. In this work, it has become clear to me that the issue of one's own death stands at the center of the work. There is often a great need for support and processing around personal issues care givers having in relations to working with dying people and their feelings about death, suffering, and loss..."*

— Being with Dying, Contemplative Approaches to Working with Dying People for the Death in America Project, January 1995, Joan Halifax.

<http://www.well.com/user/suscon/esalen/participants/Halifax/dying.html>

[used with permission]

## Resources

1. Halifax J. Project on being with dying. Santa Fe: Upaya Zen Center. Information available at URL: <http://www.upaya.org/htmls/BeingDyingHome.html>.

## Recovering Remains

One of the most difficult tasks first responders face is that of recovering human remains after a disaster. This is an experience that police, fire, EMT, and military personnel are occasionally faced with during routine duties, but it can be much more stressful in a mass casualty incident.

Some of the specific stressors associated with body handling involve:

- the sensory overload (smells, sight, etc),
- unexpected experiences,
- handling bodies of children or pregnant women, and
- feelings of personal involvement with the dead (ie., I have a child that age, or he looks like my brother).

Younger people, with no experience of death, are at risk for more stress during and after the experience. Older and more experienced responders and those who volunteer for this work are better protected from stress reactions.

Potential ways to organize this type of work to protect responders from stress include the following:

1. Ask for volunteers. Be sure that responders know what they are volunteering for by briefing them. Explain the nature of the work and the duties it will entail.
2. Prepare the responders. Simulate recovery work with drills that include graded exposure to dead bodies in a morgue. Allow volunteers to excuse themselves from the work if they discover they are too uncomfortable with that experience.
3. Pair experienced with inexperienced workers. The experienced member of the pair can provide practical advice and emotional understanding to the inexperienced member.
4. Reduce emotional involvement with the dead. Avoid looking at their faces or remaining with the same body throughout the whole process of identification.
5. Separate responsibility for handling bodies from sorting personal effects. Handling the personal effects of the dead is more emotionally trying than body recovery because it is impossible to deny the humanity of the person whose wallet photo is being held. Therefore, it is strongly recommended that people who handle the remains not be required to go through personal effects.
6. Manage for emotional health. Make sure that workers get proper rest and take eating breaks to avoid physical fatigue, which lowers emotional resistance. Team leaders should also remind the team of the importance of the work for the families of the deceased, and provide “grief leadership.” Grief leadership means showing that it is normal to grieve, even for those we do not know.

(Alexander, 2000; Deahl 2000; McCarroll et al., 1993; Ursano et al, 1999)

## Resources

1. National Mass Fatalities Institute, Cedar Rapids, Iowa. Provides training and support to prepare first responders to handle mass casualty incidents. For information, see URL: <http://www.nmfi.org>.

## Grieving Family Members of Victims

As a first responder, there may be times when you must notify a stranger's family of that person's death. That be a very difficult experience, especially for an unprepared responder. Many professions, including police and chaplains, have developed guidelines for death notifications that are honest, direct, sensitive, and compassionate. It is essential to learn and rehearse one of these techniques before going out on a death notification call. Also, an inexperienced responder should be paired or seek support from a more experienced responder when dealing with grieving and anxious family members.

Grief is a very normal and powerful emotion. How it is expressed depends on the circumstances of the death, the personality of the person notified, and the culture that person grew up in. One of the most powerful reactions that can occur, although rarely, is the physical stress reaction of shock, so the responder should be prepared for that occurrence.

### Resources

1. Young BH, Ford JD, Ruzek JI, Friedman MJ, Gusman FD. Helping survivors. In: A guidebook for clinicians and administrators. National Center for Post-Traumatic Stress Disorder, Department of Veteran Affairs. p. 33–7.
2. Various colleges and universities offer death notification or care for the caregiver courses as part of thanatology degree and certification programs.
3. Finding Our Way: Living with Dying in America. A Web-course about grief, available through URL: [www.findingourway.net](http://www.findingourway.net).
4. National Cancer Institute. 2004. Loss, grief, and bereavement (PDQ®). Available at URL: <http://www.cancer.gov/cancerinfo/pdq/supportivecare/bereavement>.
5. National Mental Health Association. 2001. Coping with loss, bereavement, and grief. Web-based information available at URL: <http://www.nmha.org/reassurance/coping.cfm>.
6. American College of Physicians. 1997. Grieving. Web-based information available at URL: [http://www.acponline.org/public/h\\_care/10-griev.htm](http://www.acponline.org/public/h_care/10-griev.htm).



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- Pozzi C. 1998. Exposure of pre-hospital providers to violence and abuse. *J Emerg Nurs* 24(4):320–3.
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Rollinson DC, Rathlev NK, Moss M, Killany R, Sassower KC, Auerbach S, Fish S, et al. 2003. The effects of consecutive night shifts on neuropsychological performance of interns on the emergency department: a pilot study. *Ann Emerg Med* 41(3):400–6.

Smith, D. 2002. Report from Ground Zero. New York: Viking.

Spoth D. 2004. Beating the freeze: suggestions for staying warm, dry and safe in cold weather. Wasilla, Alaska: Mat-Su Valley Frontiersman; 2004 Jan 5.

Ursano RJ, Fullerton CS, Vance K, Kao T. 1999. Post-traumatic Stress Disorder and Identification in Disaster Workers. *American Journal of Psychiatry* 156(3): 353-359.

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## Section III. Tips and Techniques for Managing First Responder Stress

### Signs and Symptoms of Stress Reactions in First Responders During a Response

#### Mental Distress

What happens to the mind during a field response? The focus of attention narrows, the ability to think long, complicated thoughts about new subjects is impaired. Concentration is difficult. You have trouble holding onto new information coming in, and your pattern of thinking can become rigid and easily confused.

#### Common Disaster Experiences

Some people on-scene described the events at the World Trade Center as if they were occurring in a movie. One person, on coming out of the subway just as the first tower collapsed, described running from the oncoming cloud as trying to outrace the giant boulder in *Raiders of the Lost Ark*. Many of the firefighters interviewed for the book Report from Ground Zero described the post-collapse scene as looking like the post-nuclear scene from *The Terminator* movie. (Smith, 2002)

**Table 5. Common On-scene Disaster Related Emotions**

<b>Fear</b>	<b>Disbelief</b>	<b>Feeling overwhelmed</b>
<b>Grief</b>	<b>Numbness</b>	<b>Derealization (dream-like feelings while awake)</b>
<b>Sorrow</b>	<b>Anguish</b>	

#### Physical Reactions During a Disaster

All these physical signs and symptoms happen due to the fight and flight response and are part of a normal physical response to acute distress.

In practical terms, at a response, these physical changes associated with stress may result in:

- *Increased respiration, mild shortness of breath, panting*—Need for extra respirator tanks – responders may use more air than they did in practice. Also,

with stress induced hyperventilation, you can put a paper bag over someone's mouth so the person rebreathes their own CO<sub>2</sub>. This slows down the breathing and relieves the hyperventilation symptoms.

- *Imbalances in GI function leading to queasiness, nausea, vomiting, diarrhea*—Need for access to bathrooms and wash up facilities
- *Increased heart rate and mildly elevated blood pressure*—Need for vigilance regarding chest pain due to the effects of stress on the heart.
- *Muscle twitches*—Shaking doesn't mean cowardice; it is just a reaction to the adrenaline running through the system during stress

### **Some Abnormal Stress Signs and Symptoms Needing Immediate Medical Attention**

*Physical - Chest pain, severe shortness of breath, or signs or symptoms of shock: rapid light breathing, quick light pulse, shivering, feeling chilled, nauseated, moist, clammy skin, mentally confused, and dilated pupils.*

*Psychological - Freezing up, becoming so dazed as to be unaware of one's surroundings, severe panic attacks*

### **During the Response**

Experienced team members should supervise the less experienced members. Be sure to maintain an orientation to time while you are on site. Workers need clean dry clothes, food, and time to eat the food. Limit caffeine and sugar intake on site. These foods have effects similar to the adrenaline already running through your system; too much may leave the responder too keyed up to sleep off duty. Stick to strict safe-shift rules: 12 hours on, 12 hours off. Team members need to be rotated to allow time away from the response site. Do not allow staff to donate time to assist on site when they are off duty. (Mitchell and Bray, 1990)

All the mental and physical signs and symptoms of distress should relent when the threat is over. The body, in fact, has another balancing reaction called the *relaxation response*

which returns our breathing, heart rate, and minds back to a relaxed state. Phase workers from high, to medium, to low stress duties to allow for a natural cycle of relaxation to occur.

### **After the Response**

Immediately after leaving the response, eat and sleep. Within 24–48 hours, if sufficiently rested, exercise. Refrain from using alcohol for a few days during recovery from field duty. Why? Alcohol suppresses REM sleep, the phase of sleep that contains dreams. REM sleep is crucial to the emotional healing of traumatic experiences that are frequently encountered during field operations. Alcohol also lowers inhibitions, which can make one more impulsive, suicidal, etc.

Create a set way for workers to exit the site so that there is a formal endpoint to their service. In the Red Cross, this involves an exit interview. For other services, it can involve time for an operational debriefing, re-entry information, and formal recognition for service. Each person should receive education about normal reactions to the stress of being on a response, things that have been found to help people recover from this type of experience, and signs of when recovery is going well and signs when help is needed.

### **Emotional Recovery**

After participating in a response to a technological disaster or a terrorist disaster, it is quite normal to experience many different emotional reactions for a time after the end of service. This is the psyche's way of coming to terms with what has been experienced at the site. With time, these reactions should fade. They are not symptoms of an illness and are just part of a normal healing process. Each person copes differently; some will want to talk a lot, others won't. Nothing is set in stone. Each person will have their own recovery time.

**Table 6. Common, Normal Stress Reactions After a Response**

Anger, irritability and sorrow
Detachment, shame, and guilt (feel like I couldn't do enough or I did the wrong thing)
Dreams and nightmares about the event
Distractibility
Frequent thoughts about what happened
Intrusive images (flashbacks, vivid nightmares)
Fear of being labeled abnormal in their reactions
Strains in family and work relationships

### **Factors that Aid Recovery**

#### **Social Support**

Simply talking to close friends or coworkers and receiving feedback is a form of emotional catharsis that can allow people to work through feelings and make sense of the experience. **Social support** can aid the process of putting a traumatic experience into context so that it no longer exerts an overly powerful influence on one's life.

However, if symptoms persist over time, social support may not be enough and a referral to a psychological professional should occur to see if the person needs therapy. (See Table 7 and 8 for signs and symptoms of persistent distress and the psychological disorders that can occur as a result of field service)

#### **Telling the story or disaster narratives**

Another way of healing from trauma occurs by the **telling of the story of the disaster, or disaster narratives**. After a disaster, people seek to put the events in order and seek meaning from what happened by creating a disaster narrative. This natural process helps set in order life assumptions and parts of identity that the traumatic event may have injured. There is a field of psychotherapy known as **narrative therapy** which uses life stories as tools for helping the person make life changes. (Tuval-Mashiach, 2004)

The Celtic legend below is the earliest known example of using stories as a healing device.

### **Merlin as the Wild Man of the Woods**

This version of story begins toward the end of the Merlin's life, long after his tutoring of Arthur. It is the tale of Merlin, as the Wild Man of the Wood and it recounts years of madness that took up most of the last years of his life. (Clark, 1973) This ancient story may be one of the earliest accounts of post-traumatic stress disorder ever written.

Late in his life, Merlin was involved in the battle of Arfderydd, which was between the British and the Scots. He came to the battle with two princes, Peredur and Rodarch of Cumbria and their brothers. The battle was terrible and all of Merlin's companions were killed during the course of the combat. Eventually, after heavy casualties on both sides, the British rallied and routed the Scots. At the end of the battle, Merlin was inconsolable over the loss of all his friends.

As the tale recounts, a strange madness gripped Merlin and the sight of men and civilized life became repugnant to him. He retreated to the forest and became a Wild Man of the Woods, refusing all contact with people and consumed with grief.

The rest of the account covers the struggles of Merlin's sister, wife, and King to lure him out of the woods and back into civilization. But, to no avail, arguments, gifts, pleas fall on deaf ears and he spends many years in the woods. It is not until the end of the story when Merlin asks that Taliesin, the famous Welsh bard, to visit him in the woods that progress in the struggle against his madness is made.

When Taliesin arrives, Merlin asks what set in motion the winds and the rain. Taliesin tells the many day cycle of tales which explains how the Creator set the Universe in order. After the telling of this genesis myth, a miraculous spring appears, Merlin drinks from the water and his sanity is restored and he returns to the King's court and his family.

Ancient stories such as the one of Merlin as the Wild Man of the Woods and today's psychological theory hold that traumatic experiences can at their most extreme shatter people's expectations of what constitutes a good and just world. In Merlin's case, the battle's carnage lead to his prolonged withdrawal from the world of man which was not healed until the world's order was literally restored to Merlin by a telling of the world's

creation myth. This story and a miraculous drink of fresh spring water restored his sanity. For Merlin after his traumatic grief, his world view had to be put together again. Today, this healing happens for people, through telling their own story of the trauma and seeking the meaning behind what happened through individual inquiry, with the help of a therapist, or through group or family support.

### **Rituals and Memorials**

**Rituals and memorials** allow the powerful emotions associated with a disaster to be directed in a way that unifies all the survivors and the community together. Rituals can restore the fabric of everyday life and may provide a sense of place in the moral universe. (Couch, 2001)

### **Stress Management Techniques**

Learning individual techniques of **stress management** is another way of learning how to heal post-response. Training in individual stress management consists of learning to control and even turn off the body's fight or flight response. The body in fact has another counterbalancing reaction to stress described by Dr. Herbert Benson called the relaxation response which returns our breathing, heart rate, and minds back to a relaxed state. (Lazar et al., 2000) You can learn to turn on this relaxation response which counteracts the effects of the flight/fight response by learning various methods of relaxation training. Relaxation can be achieved by learning various kinds of meditation, by tai chi, by yoga, by the technique of progressive relaxation, or biofeedback training. All these methods help turn off the fight or flight response and turn on the body's natural counterbalancing relaxation response. Other stress management techniques include journal writing, aerobic fitness, muscle strength training, and maintaining proper nutrition.

### **Signs of a Blocked Recovery**

If, over a certain period of time, some responders may notice that their emotional reactions do not fade or that their reactions from the beginning are more sharp and serious than those of other responders. Below are listed signs of potential distress that



might need a visit to be checked out by a professional. They may indicate the existence of a psychological injury caused by the trauma of exposure to the on-site hazards of a technological scene.

**Table 7. Signs of Serious Distress After an Event**

Increased use of drugs or alcohol to numb the emotions or to sleep
Long-term sleep disturbances <ul style="list-style-type: none"> <li>➤ continued inability to get to sleep</li> <li>➤ frequent early morning awakenings</li> <li>➤ too much sleep</li> <li>➤ persistent and frequent nightmares</li> </ul>
Feelings of isolation or depression
Rage
Sudden change in life attitude
Sudden catastrophic decision-making (quitting job, divorce, etc.)

(Ursano, 1997)

**Psychological Disorders that may occur after a Disaster Response**

There are a group of psychological disorders that can occur after a disaster in those exposed to the events of the disaster and also, at times, in those called to respond to the disaster. These disorders include: major depression, generalized anxiety disorders, worsening of pre-existing substance abuse, and the traumatic stress disorders, acute stress disorder and post-traumatic stress disorder (PTSD).

**Table 8. Psychological Disorders that May Occur after a Disaster**

<b>Major Depression</b>	<ul style="list-style-type: none"> <li>➤ Sad for more than a week</li> <li>➤ Loss of pleasure, appetite</li> <li>➤ Insomnia, fatigue</li> <li>➤ Guilt</li> <li>➤ Can't think straight</li> <li>➤ May become suicidal</li> </ul>
<b>Generalized Anxiety</b>	<ul style="list-style-type: none"> <li>➤ Much worry and anxiety</li> </ul>

<b>Disorder</b>	<ul style="list-style-type: none"> <li>➤ Can't control the worry</li> <li>➤ Worry associated with bodily symptoms, such as muscular tension</li> <li>➤ Free-floating anxiety (no specific target)</li> </ul>
<b>Post-traumatic Stress Disorder</b>	(See sidebar)
<b>Unresolved Bereavement</b>	Mourning that does not resolve itself over time
<b>Substance Abuse Disorders</b>	Uncontrolled drinking, abuse of prescription medicine and/or taking of illegal street drugs

(DSM IV-TR)

### Traumatic Stress Disorders : **Acute Stress Disorder and Post-traumatic Stress Disorder**

Current thought among experts holds that these stress-related psychological disorders can affect anyone given sufficient amounts of severe, traumatic stress, but there are risk factors that render some people more vulnerable to the development of these disorders.

Some of these risk factors are:

- Gender. Women are more vulnerable to the development of depression (Kornstein and Wojcik, 2002) and PTSD (11.3% for women versus 6.0% for men)(Pigott, 2002).
- Pre-existing psychological disorders such as major depression.

#### *Acute Stress Disorder*

This is a group of symptoms that can occur right after exposure to a life threatening or horrifying event. It lasts from 2 days to 4 weeks and happens shortly after the traumatic event (within 4 weeks). The symptoms associated with this disorder are:

- Being in a daze
- Feeling emotionally numb
- Derealization—changes in perceptions so that familiar things seem strange, weird, unreal, even two-dimensional
- Depersonalization—feeling like you have lost your identity, you are a stranger to yourself

- **Amnesia—**not being able to recall part of the traumatic event

Additionally, the traumatic event is re-experienced either by constant, unstoppable thoughts, images, dreams, flashbacks, or a sense of reliving the event (*déjà vu*). The traumatized person will avoid any reminder of the event. The person will show signs of increased arousal (turned on fight-or-flight response): jumpiness, startling at noise, difficulty sleeping, tense, on edge, poor concentration. These symptoms cause some degree of occupational, family, or social impairment and are not due to a medical condition or substance abuse. (American Psychiatric Association, 2000)

After a traumatic episode or a disaster, people may develop will have acute stress reaction. Many people with this disorder find the symptoms fade over one or two months. If this disorder persists longer than this time, it becomes post-traumatic stress disorder. A recent study of disaster responders found that having acute stress disorder put the person at seven times greater risk for developing PTSD than for responders without this syndrome. (Fullerton et al., 2004) Acute stress disorder and post-traumatic stress disorder requires professional evaluation and help, as do the other disorders in Table 8 above.

#### *Post traumatic Stress Disorder (PTSD)*

This psychological disorder involves a reaction to an extreme, life threatening trauma. It has the same signs and symptoms that acute stress disorder (see above) does but they occur for longer than one month and can become chronic. Current studies show that PTSD resolves in three months in 50% of those who suffer from it but it can become chronic with fluctuations in symptom occurrence. (American Psychiatric Association, 2000)

## Resources

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2. University of South Dakota, Disaster Mental Health Institute. Web site, available at URL: <http://www.usd.edu/dmhi>.
3. National Center for PTSD. Look for the following fact sheets on the map to their Web site (<http://www.ncptsd.va.gov/sitemap.html>):
  - What is Post-Traumatic Stress Disorder?
  - PTSD and Alcohol Use
  - Physical Health and PTSD
  - PTSD and Relationships
  - Nightmares and PTSD
  - Sleep and PTSD
  - Anger and Trauma
  - The Effects of the Media Coverage of the Terrorist Attack on the Community
  - Disaster Rescue and Response Workers
  - The Effects of Terrorism on Veterans
4. National Institute of Mental Health. Post-traumatic stress disorder: a real illness. Available at URL: <http://www.nimh.nih.gov/anxiety/ptsdri4.cfm>.
5. Kapi’olani Health. Recognizing post-traumatic stress disorder: the first step toward healing. Available at URL: [http://www.kapiolani.org/keeping/hg\\_search/hg\\_all.html](http://www.kapiolani.org/keeping/hg_search/hg_all.html).
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7. National Institute of Mental Health. Depression. Available at URL: <http://www.nimh.nih.gov/publicat/depressionmenu.cfm>.
8. National Mental Health Information Center. Self-care tips for emergency and disaster response workers. Available at URL: <http://www.mentalhealth.org/publications/allpubs/KEN-01-0098>.
9. National Center for PTSD. Acute stress disorder. Available at URL: [http://www.ncptsd.org/facts/specific/fs\\_asd.html](http://www.ncptsd.org/facts/specific/fs_asd.html).
10. American Psychological Association. Warning signs of trauma related stress. Available at URL: <http://www.apa.org/practice/ptsd.html>.
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## Section IV. Helping the Public

### Introduction

How do people act during a disaster? Human behavior during and shortly after a disaster depends on many things: what kind of disaster it is; if it is during, or after the disaster; and the type of people you are with (age, gender, culture). Some general rules have been found to be true:

1. Panic is rare. Panic tends to occur only where and when escape is difficult, entrapment is feared, escape routes are closing, and no outside assistance arrives (Auf der Heide 2004).
2. Most people will show emotion and stress and some may even get very upset. This heightened emotionality is not blind panic but is a result of stress and hyperarousal due to responding to a threat. Also, the new onset of psychological disorders during a disaster is rare. In other words, it is normal to be stressed during a disaster.
3. How people react depends on their culture. But, regardless of culture, most people will show a mix of physical and emotional symptoms of stress. Some of the physical symptoms of stress may be as severe as shock. Stress can also trigger heart attacks in susceptible individuals.

What most people need during and shortly after a disaster is **psychological first aid** (Cloak and Edwards 2004). Most people will be showing symptoms of stress. They will need practical assistance designed to help them relieve disaster-related stressors. They also will need emotional support designed to help them recover from the added load of stress they are suffering from.

### On-Scene Psychological First Aid for Adults

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FIRST and FOREMOST, BE SURE that you and the survivor are SAFE and the person is MEDICALLY STABLE before administering psychological first aid. Adequate triage is essential to make sure that the person's symptoms are not medical but are truly stress-

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related.

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## **Principles of On-Scene Psychological First Aid**

### **PROTECT — DIRECT — CONNECT**

— (Myers 1994)

**PROTECT**—Protect the survivor from further exposure to the disaster scene (by placing a physical barrier or your body) so their view is blocked. Respect the survivor’s dignity by covering his or her body and by protecting them from intrusion by the media or onlookers. Be warm and genuine. This attitude shows respect and begins to help calm and reassure the survivor.

**DIRECT**—Direct walking survivors away from the site of destruction and danger and away from severely injured survivors or the dead. Tell the survivor who you are, what you do, and briefly what has happened. Providing good information helps calm and orient confused and dazed survivors. Be as gentle and soothing as possible with people. They are on sensory overload. Tell the person what you are doing with them (ie., preparing for transport, giving meds, transferring to another caregiver). If you know the whereabouts of their family, be sure to share that, but avoid breaking bad news on scene if possible.

**CONNECT**—Have someone with the survivors throughout the rescue effort. Have someone around to provide comfort. Whenever possible, reconnect or evacuate survivors with their family and friends. Send them to a safe, secure off-site place and connect them to appropriate resources and referrals.

## **Extreme Disaster Behaviors Requiring Immediate Medical/Psychological Assistance**

So-called psychological signs and symptoms such as confusion, lack of awareness of surroundings, agitation can be caused by medical injury (e.g., blow to the head, exposure

to toxins, blood loss, etc.) or extreme psychological stress. When working with disaster victims, it is important to be able to recognize the need for adequate triage of changed mental status and the need to refer for medical care first to rule out physical causes.

**Table 9. Physical Cause: So-Called “Psychological” Presentation**

- Dehydration can present with mental confusion.
- Intoxication with chemicals such as alcohol, drugs, or certain specific hazardous substances can present with agitated or even delusional behavior.
- Delirious behavior due to a variety of medical causes presents with fluctuating patterns of hypoactive or hyperactive behavior, lack of attention to outside stimuli, disorientation to time, place or person, memory impairment. (American Psychiatric Association, 2000)

During the uncertain events initially following a possible terrorist attack, it is crucial that first responders—especially medical first responders—correctly triage the cause of trauma. They must accurately triage psychological conditions such as confusion and stress, from neurobehavioral effects caused by agents used in a terrorist attacks such as nerve agents, other toxins, radiations, and biological weapons.

Knowing the neurobehavioral profiles of exposure to various agents, plus being able to perform a good mental status exam and interpret its findings correctly, is crucial to correct triage (i.e., medical versus psychological care). Physical and neurobehavioral findings associated with toxic exposure depend on dose and timing of exposure. This means that clinical presentations will vary, depending on how much toxin is in the environment, how the patient was exposed, and the length of time they were exposed.

*Remember*—Do not assume that all cases of altered mental status you see post-attack are from psychological causes. Maintain a reasonable index of suspicion that toxic substances such as nerve agents (sarin, soman, Tabun, VX), trauma, or infections could be involved.



An important distinction between psychological and **organically** (physically) caused mental effects is that an organic delirium will not clear with the passage of time; it will worsen if the underlying medical cause is not corrected. With emotional support and the use of certain psychological grounding techniques, changes in mental status caused by psychological factors will clear in time.

**Table 10. Some Physical Causes of Delirious Behavior**

- Severe hypertension (very high blood pressure)
- Acute problems with body metabolism (low blood sugar, electrolyte disturbances, etc.)
- Hypoperfusion of the CNS (low blood pressure to the brain such as in shock)
- Hypoxemia (no or little oxygen to the brain)
- Intracranial bleed (bleeding within the brain)
- Meningitis/encephalitis (bacterial or viral infection of the brain or its coverings)
- Exposure to certain poisons or medications
- Withdrawal from certain drugs (alcohol, barbiturates, sedative-hypnotics)
- Trauma (burns, heat stroke)
- Exposure to toxic substances such as medicines, pesticides or solvents
- Wernicke's encephalopathy (a special syndrome connected with alcohol abuse)

(Wise and Brandt, 1992)

## Recognizing and Triaging Rare Psychological Stress Syndromes

**Table 11. Psychological Cause: Physical Symptoms and Presentation**

- Dissociation**—"zoned out," "thousand-yard stare"
- Intrusive re-experiencing**—flashbacks, repetitive automatic re-enactment of disaster behavior
- Avoidance**—extreme withdrawal
- Hyperarousal**—startle, panic attack, rage, violent acting out
- Anxiety**—overpowering worry, "freezing"
- Psychotic symptoms**—seeing or hearing things, catatonia (severe board-like immobility)

The psychological conditions and disorders found on the above list are very rare, but may occur during a disaster or terrorist attack. These disorders represent the extreme spectrum of the stress response. Remember the most common stress reactions the majority of

people have are those previously outlined— the distress and heightened emotions typical of exposure to extreme events as well as the physical symptoms of the fight or flight reaction.

Dissociation is diagnosed during the mental status exam by the following findings. Although delirious in appearance, patients with dissociation can be re-oriented to time, place, and person, unlike a delirious patient. Their mental changes will also resolve with time rather than fluctuate up and down as delirium does (Cloak and Edwards 2004).

Dissociative states can be helped in the field by certain grounding techniques. These techniques rely on reminders to the survivors of their name, where they are, and by encouraging the survivor to focus all their senses on the immediate surroundings. These grounding techniques are also useful in treating people who are having flashbacks triggered by the disaster. A flashback is not a hallucination, but an actual overwhelming re-experiencing of a past time with the sights, smells, and sounds intact. It is a falling back in time in which the person is captured by a traumatic, overwhelming memory; it is a sign of a traumatized, not a psychotic, individual.

Some people, including rescuers and first responders, may have a *physical freeze reaction*—similar to that of a deer caught in the headlights of an automobile—as a result of overwhelming fear or horror. This is a normal part of the fight-flight-freeze reaction to stress. These people will need to be pulled off site and sent to a safe, secure off-site place until recovery and resolution of their immediate stress takes place.

Some people will exhibit jumpy, hyper-aroused symptoms as a result of exposure to a gruesome scene. These physical symptoms are a result of the chemical changes associated with the stress response. Hyperarousal from stress usually resolves with time away from the scene.

Rarely, someone with a previous history of a major mental disorder, such as schizophrenia, schizoaffective disorder, or bipolar I disorder, may suffer an acute

psychotic decompensation on-scene as a result of too much disaster-related stress. This is very rare however. There are many anecdotal reports of people who suffer from these mental disorders managing quite well during crises. So, psychotic decompensation during emergency situations is not the general rule for those who suffer from chronic mental illnesses and does not occur in people who have no previous history of mental illnesses.

Many of the post-disaster problems involving the care of new psychological casualties and providing follow up to persons with chronic mental illness occur if no emergency systems of psychological and psychiatric care have been set up pre-attack.

<b>Resources</b>	
<i>Interested readers can find up-to-date information on the medical aspects of chemical and biological warfare at the following internet locations (URLs):</i>	
1. The Medical NBC Information Server	<a href="http://www.nbc-med.org">http://www.nbc-med.org</a>
2. Medical Research Institute of Chemical Defense	<a href="http://chemdef.apgea.army.mil">http://chemdef.apgea.army.mil</a>
3. Medical Research Institute of Biological Defense	<a href="http://www.usamriid.army.mil">http://www.usamriid.army.mil</a>

## On-Scene Psychological First Aid for Children

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FIRST and FOREMOST, BE SURE that you and the child are SAFE and they are MEDICALLY STABLE before administering psychological first aid.

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1. **PROTECT**— For a first responder on the front line, protecting children means physically removing them from the scene as soon as safely possible. Very young children (ages 1 to 6 years) may suffer from being mentally overwhelmed. They may be agitated and may physically “freeze up” when in danger. They may be incapable of helping themselves or thinking very clearly. They may not be able to talk and may be confused by what has happened. As soon as possible, protect the child from reminders of the scene (smells, sights, noise, etc). Also, protect them from contact with onlookers and the media. Reunite with parents ASAP.

2. **DIRECT** —Tell the child who you are and what you do (I’m a policeman, firefighter, medical person) and how you will be helping them. Provide simple, kind but firm directions to the child. Because of their mental confusion, they will need more supervision than adults and very gentle, simple and concrete direction (for example, please go and sit over there). Provide simple updates of what is happening so children can begin to understand the situation. This may help calm them.

3. **CONNECT**—Whenever possible, evacuate the child with their parents or legal guardians. If that is not possible, move the child to the agency that has the legal responsibility for care of minor children at the scene and is set up to care for them.

## Coping After a Disaster

First responders and their families are not immune from becoming disaster victims themselves. It helps to remember a few simple tips for helping your family and friends recover after a disaster.

## **Helping Family and Friends Recover After a Disaster**

First, make sure that their immediate medical needs, if any have been tended to. Then, get them to a safe and secure place, whether your own home or with relatives. Make sure they have eaten and gotten enough to drink and are comfortable. If going out of town, bring medicines and other necessary items from home, including a small number of familiar comfort items. Provide them with any information you have about other family and friends. Make sure that they get some sleep in a private space. Then, provide regular everyday companionship and help them restore their daily rituals and routines (a cup of morning coffee and tea, the paper, etc). These simple interventions are the first steps in helping your family and friends begin psychological recovery.

After the immediate emergency has passed and the immediate symptoms of shock and confusion have subsided, adults transition to a new phase. That includes a physical phase of assessing their losses and rebuilding and a psychological phase of assimilating and working through the meaning of the experience. Assistance during this stage of recovery consists of practical assistance, such as finding a car, new living space, etc so as to help your family and friends eventually resume normal job and family functions. Emotional recovery or, “working through” takes its own psychological time; there are no set outside time or stages for it. This emotional “working through” is a natural healing process that relies on the workings of dreams, emotional processes, and social support.

But, there are some signs that someone is successfully putting things in perspective or is “stuck” and might need help. People who have lived through a disaster or terrorist attack have an overwhelming urge to tell the story over and over again. By so doing, they are sorting out the sequence of events, which at first may be an inchoate jumble. They are seeking social support and input into their story and they are seeking to put meaning into the experience.

Generally, if someone is getting better, the story will pull together on repeated telling into a more coherent narrative. The story will contain more vivid details, emotion, and reflections about lessons learned during the experience. The person’s dreams about the

event also will cease to be exact replicas of the disaster and will be more remote, disguised versions of the event that do not evoke so much emotion. The person will have gained some distance from the event that is obvious to the outside observer.

Signs that the person is overwhelmed are if the story is too painful to tell and when the survivor or survivors create a wall of silence around the event. Another possible sign of things getting stuck and not healing naturally is if dreams of the event do not change, but remain exact repetitions of the event and continue to evoke very painful emotions.

(Tuval-Mashiach et al. 2004) A referral to a psychological professional may be indicated when a survivor has difficulty integrating their experience and emotions.

## Resources

- US Department of Justice, Office for Victims of Crime. 2001. OVC handbook for coping after terrorism. 1(800)627-6872, TTY 1(877)712-9279. Available at URL: [http://www.ojp.usdoj.gov/ovc/publications/infores/cat\\_hndbk/welcome.html](http://www.ojp.usdoj.gov/ovc/publications/infores/cat_hndbk/welcome.html).
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- National Mental Health Association. Coping with disaster: tips for adults. Available at URL: <http://www.nmha.org/reassurance/anniversary/index.cfm>.
- National Center for Post-Traumatic Stress Disorder. Fact sheets for “Self Care and Self-Help Following Disasters” and “Helping Survivors in the Wake of Disaster.” Available at URL: <http://www.ncptsd.org/facts/disasters/index.html>.

## Helping Children Cope After an Event

How a child responds to a disaster or terrorist attack depends on many things. One factor, like adults, is their degree of exposure—how close they were to the event, whether or not they were personally injured, or knew someone who was injured or killed. Also, in this

media age, exposure to the event by television has been found to have a hurtful effect on children (North et al. 2002). Another very important variable is age. Children understand the world very differently depending on their age. A toddler and an adolescent obviously do not process an event in the same way.

In disasters, very young children (ages 1–6 years) tend to be overwhelmed, both emotionally and mentally. After a disaster, it takes much longer for them to work out what has happened and they will need adult help in doing so. (Pynoos, 1988) One very important thing parents can do is limit what and how much television coverage of the event very small children may watch. Some experts suggest that young children should not watch such events on TV, or, if that is impossible, that adults should be present. Also, be aware that young children may not understand that replays of the events are not new disasters unless they are told otherwise.

After an event, both young and school age children will tend to re-experience the event in scary dreams. They may become more clingy and fearful as bedtime approaches and may want to sleep with parents. They may also startle easily and be jumpy at things that remind them of the tragedy. School-age children may have angry outbursts at very slight provocations. Both young and school age children may express their feelings not by words, but by bodily symptoms such as headaches. After an event, children will need to frequently check on the whereabouts of friends and family to make sure they are okay and that another disaster has not happened to them.

Teenagers tend to have a more mature view of the event and can handle more information about it than can younger children. Teenagers have emotional responses similar to adults, including guilt over survival, numbing of emotions, sorrow, and anguish. They may tend, however, to handle their emotions by either withdrawing from close ties, acting out in self-defeating behavior or at worst, by using drugs or alcohol and problems at school. It is important to gently point out the link between the emotions they are feeling and the behaviors they are expressing.

Ways to help children with these feelings and behaviors include:

- **Maintain the child's routine and order.** Children need to be kept to their regular wake-sleeping-eating-exercise routines as much as possible, especially if they are in a strange place post-disaster. A predictable environment makes children feel safe and makes them calm. If older children are having trouble going to bed alone, adding a nightlight, allowing them to read before bed, or leaving a tape of music on, may help ease the transition to sleep.
- **Be sure to talk with your children about what has happened.** Children may have a confused notion of what has happened. Talking with them when they are ready and giving age-appropriate answers to their questions can help give them a clearer picture of what happened. Be careful, especially with small children, not to provide too much information as they may not be able to take it in and may become further confused.
- **Be sure to talk with your children about what they are feeling.** Very young children (under age 6 years) may have trouble recognizing their feelings. It helps them to have a simple name for a feeling: angry vs. sad, scared vs. troubled. Keep these conversations simple and short to avoid overwhelming the child. Young children can be helped to work through their feelings by playing about the situation. However, keep an eye on the play. If it revolves around scary or hurtful themes and the play seems to end, but is endlessly repeated, steer your child away from this activity. Older children may need emotional support and reassure that their fears are normal feelings and will heal with time.

## Resources

- The National Child Traumatic Stress Institute. Resources for talking to children after traumatic events can be found at URL: [http:// www.nctsnct.org](http://www.nctsnct.org).
- Zero to Three. Little listeners in an uncertain world: coping strategies for you and your child after September 11. Advice for dealing with very young children, 1(800)899-4301 or <http://www.zerotothree.org/imh>
- American Academy of Child & Adolescent Psychiatry. Disaster response Web site; provides facts and resources for families on helping children after disasters,



<http://www.aacap.org/publications/DisasterResponse/index.htm>.

- Yale University, National Center for Children Exposed to Violence. Resources for parents and teachers on talking to children about terrorism. Available at URL: [http://www.nceev.org/violence/children\\_terrorism.htm](http://www.nceev.org/violence/children_terrorism.htm).
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