Textbook of Disaster Psychiatry

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CAMBRIDGE
UNIVERSITY PRESS

Traumatic death in terrorism and disasters

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Terrorism and disasters are not infrequent occurrences in the present-day world. Common to these events is the likelihood of violent death and the presence of human remains – burned, dismembered, mutilated, or relatively intact.[1] Exposure to mass death as well as individual dead bodies is a disturbing and sometimes frightening event. The handling of the remains of the dead following combat, natural disasters, disasters of human origin, and terrorism, accidents, and other forms of traumatic death is known to cause distress. The nature of the stress of exposure to traumatic death and the dead and its relationship to post-traumatic stress disorder (PTSD) and other post-traumatic psychiatric illnesses is not well understood (Breslau & Davis, 1987; Lindy et al., 1987; Rundell et al., 1989; Ursano, 1987; Ursano & McCarroll, 1990).

The tasks of body recovery, identification, transport, and burial may require prolonged as well as acute contact with mass death. Recent research has shown that victims, onlookers, and rescue workers are traumatized by the experience or expectation of confronting death in disaster situations (Dyregrov et al., 1996; Jones, 1985; Miles et al., 1984; Schwartz, 1984; Taylor & Frazer, 1982). Exposure to abusive violence (Laufer et al., 1984) and to the grotesque (Green et al., 1989) significantly contributes to the development of psychiatric symptoms in war veterans, particularly intrusive imagery (Clohessy & Ehlers, 1999; Laufer et al., 1985; Lifton, 1973).

Initial studies on the effects of handling the dead were observational with few systematic descriptions of the differences that occur at various stages through the process, or group or individual differences in responses. Hersheiser and Quarantelli (1976) reported on how the dead were treated by the living following a flood. They observed increasing respect for the body through the phases of search, recovery, identification, and preparation for burial. About a third of the volunteers who recovered bodies from the Mount Erebus air crash in Antarctica experienced transient problems of moderate to severe intensity at 3 months and one-fifth continued to report high levels of stress-related symptoms (Taylor & Frazer, 1982).

In a survey of 592 US Air Force personnel involved in the recovery, transport, and identification of the bodies of the Jonestown, Guyana, mass suicide, youth, inexperience, lower rank, and greater exposure to the dead were associated with higher levels of emotional distress (Jones, 1985). Higher rates of dysphoria were also found in blacks compared to whites, possibly due to greater identification with the black victims by the black body handlers.

During the past two decades there have been a number of studies of the effects of handling remains on rescue workers recovering remains from the collapse of a hotel skywalk (Miles et al., 1984), police and firefighters (Bryant & Harvey, 1996; Fullerton et al., 1992; Regehr et al., 2000), disaster workers following the collapse of a freeway due to an earthquake
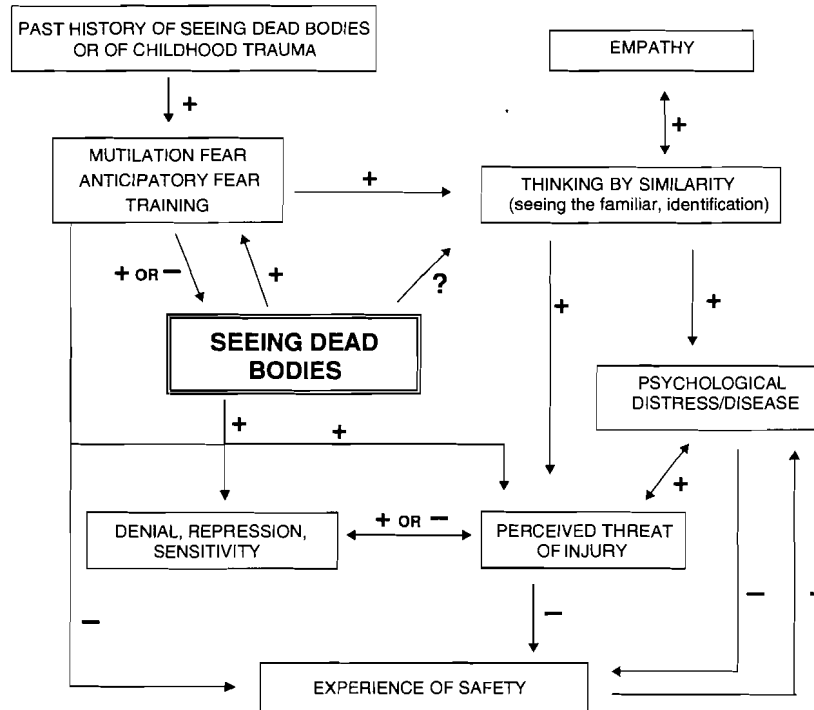
Figure 11.1 Model of cognitive and emotional processing of exposure to death and the dead by disaster workers

(Marmar *et al.*, 1996), ambulance service workers (Clohessy & Ehlers, 1999), divers recovering bodies from an airline disaster (Leffler & Dembert, 1998), and war (McCarroll *et al.*, 1993a, 1995b, 2001, 2002; Sutker *et al.*, 1994). In all these situations there are examples of the fact that regardless of profession or past experience, exposure to violent death can create psychological distress and contribute to psychiatric disorders. Figure 11.1 illustrates the inter-relationship of past experience, psychological, cognitive and environmental influences in disaster workers exposed to the dead.

Traumatic stressors associated with exposure to mass death

In order better to understand the nature of the stress experienced by exposure to traumatic death,

Table 11.1 Stressors in traumatic death

Anticipation of exposure to traumatic death
High levels of sensory stimulation
Types of remains (e.g., children, gruesome, intact)
Degree of exposure
Novelty, surprise, and shock
Personal effects

we compiled data from observations, interviews, and surveys from over 1000 disaster remains handlers (Cervantes, 1988; Maloney, 1988a, 1988b; McCarroll *et al.*, 1993a, 1993c, 1995b, 1996; Robinson, 1988; Ursano & McCarroll, 1990; Ursano *et al.*, 1992, 1995). Commonly reported stressors associated with traumatic death are listed in Table 11.1. The conditions and events that may mediate or moderate those stressors are presented in Table 11.2.

Table 11.2 Mediators and moderators of stressors in traumatic death

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Previous experience

Training

Volunteer status

Emotional involvement of the worker with the dead

Good supervision and management practices (food,
water, rest breaks, work scheduling)

Outbriefing by supervisors

Knowledge of avenues of referral

Follow-up by supervisors

Anticipation of exposure

Anticipation of exposure to death is itself a potent stressor that can be debilitating and affect performance, behavior, and health. It is an important, but often overlooked, aspect of disaster and rescue work. The stress burden may begin before the actual exposure (McCarroll *et al.*, 1993b, 1995c). The period prior to the exposure to remains provides an opportunity for predisaster training and intervention. Predisaster counseling may be effective in part through its effects on anticipated stress (Myers, 1989). Lower anticipated stress may come from training and previous experience, and result in improved performance and decreased fatigue and risk of adverse psychological effects.

The disaster worker anticipates the stress of upcoming work before it actually begins and may begin work with an already substantial stress burden. Ersland *et al.* (1989) reported that waiting time was a frequently reported stressor among professional firefighters. Disaster workers may wait minutes to days after notification before they actually begin their rescue work. In interviews of disaster workers, we have heard stories of extended periods of waiting and high levels of stress. For example, novice rescue workers recruited to remove bodies from a plane that had caught fire and burned after landing had to wait several hours while wooden supports were put under the wings of the plane so it would not collapse on them.

The stress of anticipation has important psychological and physiological effects. In a group of military personnel with no previous experience in handling remains, females had a significantly higher level of anticipated stress than males (Arthur, 1987; Mitchell *et al.*, 1958; Susnowski, 1988). However, when experienced men and women were compared, there were no differences in anticipated stress (McCarroll *et al.*, 1993d).

Military physicians who responded to the Pentagon bombing on September 11, 2001 described anticipating their reaction to what they might encounter, a lack of preparation concerning sensory stimuli, a fear of their own reaction to viewing the dead, and anticipation anxiety manifested as impatience and restlessness while riding to the disaster site (Keller & Bobo, 2002).

Sensory stimulation

Profound sensory stimulation is often an extremely bothersome aspect of handling the dead. The handler is assaulted through all the senses. The smell was often noted as the most bothersome aspect of the job, but visual and tactile sensitivity were also reported. One remains handler at Dover Air Force Base was concerned about not being able to "wash the smell away." He wondered if the odor was real or "in my head." Individuals who reported working with the bodies from the Jonestown mass suicide and those who worked with the Marine bodies from the Beirut bombing in 1985 were greatly disturbed by the overwhelming odor of these already decaying bodies. Workers will often try to mask the odor with burning coffee, smoking cigars, working in the cold or using fragrances such as peppermint and orange oil. However, such a strategy can backfire by associating yet another smell with the remains. Often such masking substances are not available and the fragrances can make some people sick. Mouth breathing is almost always effective in limiting the exposure to odors associated with mortuary operations.

The preparation and consumption of food was frequently difficult after exposure to traumatized

bodies. Badly burned bodies were reported to look and smell like roast beef. After exposure to burned bodies many individuals, including some members of our research team, avoid eating meat for weeks and months following exposure to the dead. To one body handler, rice in brown gravy looked like maggots. Following the 1989 United plane crash in Sioux City, Iowa, one rescue worker reported that he had lost all sexual interest because he could not look at women's bodies without being reminded of the dead females he had recovered from the site of the crash. Security police guarding the dead at Sioux City felt great discomfort when the wind blew blankets off the dead exposing parts of the bodies.

One emergency medical service worker complained about the way the morgue workers handled the bodies of people she brought in. She was particularly disturbed by the loud sound of the head striking the surface of a hard examining table when a body was thrown onto it.

Other visual and tactile sensations associated with the dead were also reported. Many reported wearing gloves to handle the bodies, even rescue workers who were unlikely to touch bodies. This seemed to serve both a real and an imagined protective role. In some settings, the gloves also became a symbol of being a member of this special group – the body handlers.

Type of remains

Children

Some remains are troublesome to almost all recovery and mortuary workers. Handling or viewing the bodies of children is uniformly stressful regardless of the age or sex of the body handler or whether that individual has children. Children's bodies were reported as difficult because they appeared innocent, or they had "untimely deaths." Other descriptions were: "They were complete victims. They had not yet lived. They had no control over it." Pathologists described increased stress associated with doing autopsies on children.

Natural

Some workers also reported natural looking bodies and those with no apparent cause of death as being disturbing. Bodies that were fully clothed and with no apparent cause of death were described as "eerie."

I would say that it was probably more difficult for me to deal with remains that had a single gunshot wound or single penetration that we knew were going to go home viewable; more so than an air crash where the remains were severely charred or decomposed. I think we key on the face of that person. If there isn't a face or a head, it seemed like the whole focal point of expression was gone. In the case of —, who had a single shrapnel wound to the neck, we knew he was going home, out of the war, because of a little damn piece of metal, a fragment. I think it probably bothered me to see how sensitive life is to foreign objects compared to a hell of a crash or an explosion, which tears you up.

Pine (personal communication, 1988) reported that in cases of the "untouched, but dead, everybody stops." A young woman who had died in a plane crash appeared natural to a recovery worker. However, her feet had been underneath the seat rack and were torn off leaving only two stumps.

Historic

Remains of long-dead service members or other victims of trauma are often recovered through accidental means or through searches based on access to the former battlefield or new information. For example, remains are still being returned from the Pacific theater in World War II and, particularly, from the Vietnam War. The recovery and identification of these remains is generally much less stressful to mortuary workers than those from a recent war or tragedy. The workers who recover such remains usually have a great sense of pride and accomplishment, particularly when the result fills a missing piece in a family's life (Sledge, 2005). The deceased are treated with special care and there is sometimes a sense of awe among the workers as they feel they are privileged in being the first to see a hero after a long rest. Feelings of exhilaration and

excitement are often reported when there is a forensic puzzle to be solved. However, responses to historic remains are not uniformly positive. The handling of personal effects of Holocaust victims and survivors has been seen as disturbing, especially to young, inexperienced workers (McCarroll et al., 1995a).

Nonhuman

Even a nonhuman body can produce discomfort. Pine (personal communication, 1988) reported a person who was very distressed at finding a dead pet dog in the luggage compartment of a commuter aircraft crash. The person said that he "could not handle" the dead dog and was distressed because he knew others would not take it seriously.

Commonly encountered and idiosyncratic reactions to remains

Many types of remains are difficult to handle, but the amount of distress associated with them is not uniform. For some, gruesome remains may not resemble a person and may cause less distress than an intact body. Badly burned bodies, bodies that had lain in water for a long time, and decapitated bodies were also vivid in people's memory. Burned bodies have a strong smell and bodies that have been in water will swell and skin will come off, making them difficult to handle physically. Disassociated body parts can also be difficult to handle, particularly hands. In addition to these general categories, which could be considered to be high-risk categories, each person is usually vulnerable to different types of remains. Supervisors should not only be aware of the potential for distress due to the types of bodies that are commonly considered stressful, but also listen for what might trouble the individual that is different from others.

Degree of exposure

The duration (or degree) of exposure to the dead is an important predictor of post-traumatic stress reactions. When volunteers are assigned to escort a body through the identification process, they are exposed to many more bodies. The sight of so many remains at one time and place increases the level of exposure and contributes to the stress of the experience. Some volunteers, including those who had prior experience with traumatic death in police or emergency service work, described the sight of a large number of remains as "overwhelming." One man reported, "The bodies just kept coming and coming. It felt like you were surrounded." Another said, "It's hard not to look when you are surrounded. You are too tense to be bored."

Two studies involving body handlers longitudinally found significantly higher levels of intrusion and avoidance symptoms at 3–5 months and 13–15 months after the war than in the comparison group (McCarroll et al., 1993a, 1995b). The forensic dentists who identified the remains of the Branch Davidians in Waco, Texas had significantly higher distress, related to the hours of exposure to the remains (McCarroll et al., 1996). Symptomatic distress in emergency service workers was related to the degree of exposure to the traumatic incident, the severity, and type of activities including working with dead bodies (Weiss et al., 1995).

In the only study examining pre and post responses of mortuary workers to handling bodies, intrusion and avoidance symptoms were measured in four groups of workers based on their degree of exposure to the remains (McCarroll et al., 2002). When age, sex, volunteer status, and experience were controlled, postexposure intrusion symptoms increased significantly for all groups exposed to the dead, and avoidance symptoms increased in the two groups with the most exposure. Importantly, even after controlling for symptoms expressed in anticipation of exposure to the dead, exposure itself increased post-traumatic symptoms.

Novelty, surprise, and shock

In addition to the raw, offensive sensory stimulation, surprise, shock and fear of the unexpected are disturbing aspects of handling dead bodies. When we

asked a group of experienced military body handlers how they would train a group of inexperienced people to retrieve bodies if they only had a day to do so, we were told, "Tell them the worst. Make it so there are no surprises. Let them know what they are in for."

The surprise and shock of seeing the victim's face when the body bag is opened was described by one subject: "When our soldiers open that bag, they don't know what they are going to see!" Another man who handled bodies in Vietnam recalled that he was always upset when bodies were lying face down in body bags. The back of the head is very strong and usually intact regardless of the condition of the face. He was always frightened of what he might see when he turned the body over. Pathologists at Dover Air Force Base X-rayed the body bags before opening them in order to lessen the initial shock and surprise. They reported that seeing bodies at a crime scene was generally more difficult than seeing the same bodies in a laboratory where the setting was familiar and surprises were unlikely.

The opening of the first body bag at the mortuary after a disaster is nearly always a quiet, anxiety-filled event. One group of inexperienced body handlers during Operation Desert Storm physically moved 15–20 feet away from the body when the bag was opened without anyone having spoken a word. When the body bag was fully open and there were no surprises, they moved closer. One individual described having to recover a child's body for burial. When he initially picked up the body, he was surprised by the way it felt in his arms because it reminded him of recently carrying one of his own children.

Rescuers may consciously avoid coming into contact with a dead body. A police harbor unit diver recalled his first underwater contact with the foot of a body:

I hoped it was just a sneaker ... feeling the ankle I thought, "let it be just a boot" ... feeling the leg, "please, God, let it just be a wader."

This concern was also expressed by a fireman.

A lot of firemen do not want to recognize a dead infant. One fireman went into a room full of smoke and felt around, touched the dead infant, and said it was a dog.

Personal effects

Among the most difficult jobs for mortuary workers is handling the personal effects of the dead. This is often surprising to inexperienced managers of a temporary mortuary or collection site. It is usually believed that gruesome remains are more disturbing to workers and, as a result, inexperienced persons are sometimes assigned to handle personal effects. In general, regardless of the state of the remains, personal effects have the power to humanize the deceased. They provide a link between the dead and the worker than is often not present until the remains acquires a name or otherwise begins to take on human properties, which can occur when personal effects are associated with the deceased. Almost invariably, mortuary workers will remark about a watch that continues to run after the person is dead or a watch that stopped running at the moment of impact. Identification cards, rings, pictures, wallets, and letters are among the strongest reminders of the deceased's humanity. As contact with personal effects becomes more intimate and prolonged, the likelihood of disturbance for the worker, at least temporarily, is increased.

During the Vietnam war, handling the personal effects of the dead was more stressful for some soldiers than processing the remains for shipment home. As in other wars, some soldiers carried extensive collections of letters and photographs from loved ones and other personal material. Military graves registration personnel had to screen these items for objectionable material and the presence of blood or body fluids before they could be sent home. In reading letters of the deceased, the feeling of knowing the family bothered some workers, particularly the fact that they knew the soldier was dead and the family back home did not. Graves registration personnel who had worked in Vietnam provided anecdotes:

In Vietnam, we lost more of our people who dealt with personal property that had to read the letters and screen the personal effects, than the ones who actually worked with the hands-on side of it ... with human remains. That's something that a lot of people find hard to believe, but

after you explain it to them, that a guy would sit there day after day reading those letters from a loved one. That would probably be more of a mental stress than those who worked with the deceased human remains from combat.

Say a guy got zapped after 11 months; he had 11 months worth of letters. Somebody had to sit down and physically read every one of those letters because they would be sent back to the next of kin. Those guys who worked on the personal property side, they would have to sit there and do that day after day, month after month, and finally, for some of them, the stress of getting emotionally involved with those people ... anybody could. You know, you sit there day after day and read through a guy's stuff, especially if you've got children and if you've got any kind of feeling within you whatsoever. But some of them just couldn't cope with it. Some had to be sent back to the mortuary side and some had to be put back for reassignment.

We were just taking the personal effects off the remains and we had the soldier's billfold in our hands and here was a picture with his wife and two children. You know the impact that had on me! It just stopped me cold and I said something to the men. I said "Isn't this God-awful that we know this soldier is dead and his wife and children are going to get that news in a matter of hours or days."

Identification or emotional involvement with the deceased may produce a high degree of distress. Many subjects described identification, a sense of kinship with the body, in different ways. Some reified identification in a magical way with guidance of how to act: in the same way that a body handler took care of a body from the battlefield, someone would take care of him. A common reaction was, "It could have been me." Children's bodies often stimulated a sense of emotional involvement. The viewers frequently reported thoughts such as, "I remember when my kids were about that age."

Other examples of emotional involvement that are disturbing to body handlers are the bodies of friends and acquaintances and "brothers in uniform." Pathologists had an unwritten rule that they would not do an autopsy on a friend. "I wanted to remember him the way he was." An officer in charge of a large graves registration facility in Vietnam reported, "I always feared seeing somebody I knew." A fireman said

What makes the biggest impact is seeing a dead firefighter – it brings it home. You have to deal with the realities: you're here and he is not.

A body handler who participated in the Grenada operation reported

Most of us had horrendous nightmares about escorting a friend or family member home in a casket.

A senior police official told us

I had a cop die in my arms. I still cannot get it out of my head. I didn't know him. He got shot in the back five times. I took him off the roof and got him down to the sixth floor and he died in my arms. I still can't get that out of my mind, still think about it once in awhile, if I hear a name or something comes out. But, I won't dwell on it. I just didn't like the idea that a brother I had worked with died in my arms.

At Dover Air Force Base, one group of body handlers became very upset after working for weeks with the personal effects of one victim. They developed the fantasy that they knew the victim and his family. Another group became anxious when they saw features of a body (soot in throat, posture), which they thought indicated the individual had been alive after the crash. Experienced personnel, professionals and nonprofessionals, cautioned newcomers against becoming emotionally involved. Most experienced workers could describe how they avoided emotional involvement. These body handlers gave tips to new personnel such as "Don't look at the face. Don't get emotionally involved. Don't think of it as a person."

At Sioux City, rescue workers reported distress when they saw handwritten materials in the wreckage. "It meant someone wrote it. They had been alive." Young workers, learning to work with the personal effects of Operation Desert Storm casualties, gingerly went through the personal effects, relaxing only when a more senior worker made it a standard routine with forms to complete.

In the Gander, Newfoundland, US Army plane crash prior to Christmas week, 1985, the discovery of toys in the wreckage sent waves of anxiety and concern through the disaster workers as they worried

that children had been on the plane. None, in fact, were on board.

Previous experience and training

Previous experience (see Table 11.2) with a stressful event has been shown to reduce the effects of the stressor. In studies of parachute jumpers (Fenz & Epstein, 1967) and pilots (Drinkwater et al., 1968; Mefferd et al., 1971), those with less experience reported higher levels of fear and anxiety than experienced persons. The relationship between experience and psychological responses in disaster workers has been documented; however, the mechanisms underlying this relationship have not been closely examined. Experienced disaster workers consistently show lower stress following a disaster than inexperienced workers. A higher proportion of nonprofessional rescuers than professionals reported poor mental health 9 months after recovering victims from an oilrig collapse at sea (Ersland et al., 1989). The more experienced rescuers were less likely to have poor mental health than the less experienced rescuers.

Weisaeth (1989) observed that a high level of disaster training or experience was significantly correlated with optimal behavior during the disaster. Firefighters experienced in mass disasters had lower stress responses after the event than did nonprofessional firefighters (Hytten & Hasle 1989). The long-term effects of past experience and training are less clear. During the first week after a disaster, professional rescue workers had significantly greater unpleasant feelings than nonprofessionals; however, the reverse was true 9 months after the disaster (Lundin, 1990). Weisaeth's (1989) study of disaster behavior among survivors of an industrial explosion suggested that training and experience were extremely powerful variables in predicting health outcome. Persons who had experienced severe flooding in southeastern Kentucky had fewer symptoms than those who had not experienced floods (Norris & Murrell, 1988). These findings were interpreted as evidence for stress inoculation and emphasized the advantages of prior experience with a stressor.

Inexperienced voluntary workers who recovered the bodies of children from a bus accident reported significantly more intrusion and avoidance at 1 month and more avoidance at 13 months than the professional workers (Dyregrov et al., 1996).

For forensic dentists working with the remains of the Branch Davidians, co-worker support was significantly higher for experienced dentists than for those who were inexperienced in handling remains (McCarroll et al., 1996). Interestingly, spouse support was significantly related to lower levels of stress symptoms in the inexperienced dentists but not in those with more experience. These findings challenge the belief that highly trained professionals are immune from the post-traumatic stress of body recovery and identification.

Volunteer status and emotional involvement with the dead

Volunteer status was related to lower psychological distress and intrusive and avoidance symptoms in military personnel anticipating working with the dead of the Persian Gulf War (McCarroll et al., 1995c). Emotional involvement, sometimes experienced as identification with the dead, is an important mechanism in the stress–illness relationship (Ursano et al., 1999). In research on mortuary workers who handled remains from the USS Iowa explosion, three types of identification in mortuary workers were examined: identification with the self ("It could have been me"), identification with a friend ("It could have been a friend"), and identification with a family member ("It could have been a family member"). Interestingly, those who identified with the deceased as a friend were more likely to have PTSD, had more intrusive and avoidant symptoms, and somatization.

Good supervision and management practices

Some studies show few or no negative effects from handling remains (Alexander & Wells, 1991; Tucker et al., 2002). Organizational and managerial practices

may serve a prophylactic role in preventing adverse post-traumatic reactions in experienced police body handlers (Alexander, 1993). Thompson and Solomon (1991) speculated that the management of the participants affected the relative lack of adverse outcomes in a sample of police officers. The officers were well trained and prepared for the task and were monitored throughout the procedure and thereafter, showing concern of management for their welfare.

Close supervision is important for monitoring the welfare of the worker as well as the accomplishment of the many tasks associated with recovery and identification of the dead following a disaster. To decrease fatigue and distress, workers should be provided with food, water, opportunities for sleep (when the site is remote), changes of clothing, hygienic conditions for washing and bathing, and rest breaks away from the recovery site or morgue.

Outbriefing by supervisors, referral, and follow-up

The manner in which the recovery and mortuary operations are completed can have an effect on the worker's feelings about what has gone before. In many disasters, workers are simply told they are no longer needed and sent on their way. At a minimum, there should be a "thank you" from a senior official. When workers come and go as a group, it is helpful for a senior official to describe the totality of the event for people, such as the number of remains recovered, supplies used, support rendered by outside agencies, and other timely information that will help the worker put the event in perspective. Workers who desire a spiritual message at the end of an operation sometimes request a memorial service. While mental health debriefings are not required or advised, it is helpful for workers to know if assistance can be provided once they leave the scene. Finally, if possible, supervisors may personally contact or telephone the worker some weeks after the event to inquire about that worker's welfare. While such later contact is, at minimum, a considerate and courteous act, it also will help the supervisor obtain information that may be helpful to management in the future.

Specific stresses of exposure to death and the dead in war

Death from friendly fire

The death of a soldier caused by an error of comrades is termed death by friendly fire. For example, during ground combat, the assault force may call in artillery fire to hit a target that is very close. The artillery fire may fall short of the target and hit the assaulting troops. Aircrews are never perfectly accurate in the engagement of their targets. Bombs can misfire or friendly forces be mistaken for enemy. Military commanders and troops generally realize that friendly fire deaths are an unavoidable part of war. Such deaths occasionally also occur in civilian police work. However, that does not remove the shock, remorse, and trauma of the experience.

During Operation Desert Storm, body handlers reacted to friendly fire deaths as they would to deaths resulting from combat with the enemy. The dead were comrades who had fallen in battle. A military officer who supervised body handlers at Dover Air Force Base during Operation Desert Storm was angry because he believed that personnel killed by friendly fire did not receive the Purple Heart upon their death. His assumption expressed his feelings of the wastefulness of the death. In fact, these men did receive the Purple Heart. In other friendly fire deaths, troops had been clearly marked by clothing, position, or vehicles and the deaths "should not have happened." The remains handlers reacted to these deaths with great anger and dismay.

Death of women

The deaths of American military women in the Persian Gulf War of 1990–1991 stirred disquiet among the body handlers and supervisors. On looking back on the experience, one body handler remarked, "The first woman casualty was the hardest

to handle." The remains handlers had seen her interviewed on TV, which made her more real. Her personal belongings were kept separate from those of the men and were not handled through the usual procedures. Supervisors insisted that a woman be present when the body of a dead female soldier was being identified. This angered the male remains handlers. The remains of females were kept completely wrapped and the number of personnel involved in the identification procedures was kept to a minimum. The bodies of men, although always treated with respect, were not required to have a male escort and their remains were left uncovered during the identification procedures.

The body of a pregnant woman killed in Panama in 1989 was kept separate from the other dead. Remains handlers treated her wooden casket as special. It was placed to the side and no other bodies or boxes were stacked on top.

Accidental deaths

Accidental deaths in war due to avoidable accidents or misconduct were termed "dumb deaths" by the observers. These deaths were reported to be particularly disquieting. The people had made it through combat and then were later killed while playing with munitions or handling weapons in an unsafe manner.

Enemy dead

American soldiers in Operation Just Cause in Panama reported few feelings about enemy dead. An exception was when several soldiers went through the wallet of a dead Panamanian soldier and saw pictures of family, children, and a First Communion. They broke down and cried and later went to see the chaplain to talk.

Personal threat to the body handler

In a study of the anticipated stress of handling remains, personal threat to the body handler was one of the significant clusters of concerns (McCarroll

et al., 1995d). In order to retrieve persons killed in combat, soldiers may have to endure hostile fire and remains may be booby-trapped.

In the response to the Pentagon attack, recovery workers were concerned about exposure to toxic materials such as jet fuel, dust, asbestos, and unknown contaminants. In addition to environmental contaminants, unexploded ordnance and other explosives, workers must contend with the possibility of the HIV virus and other known and unknown pathogens. As a result, more protective equipment must be available and worn at a disaster scene. The wearing and maintenance of protective clothing and equipment sometimes requires extensive training. Such clothing and equipment also add to the weight burden of rescuers and produce fatigue faster than would normally be the case.

Coping with exposure to the dead

Coping strategies vary in the different stages of exposure to traumatic death and with the degree of experience of the body handler (see Table 11.3).

Before exposure

Few organizations practise their response to a disaster although such events are expectable. Only the timing is unpredictable. In the case of the crash of United Airlines Flight 232 in Sioux City, Iowa, in July 1989, an air crash disaster drill had been performed prior to the crash and was reported to have been very helpful. Generally, inexperienced personnel who volunteer to help at a disaster site are rarely given more than a few hours to prepare for what they will see and do.

People often reported feeling frightened of their own reactions to the bodies, asking themselves, "Will I be able to handle it?" Those who volunteered in pairs or larger groups thought that they could help each other get through the experience. Initial preparation by a supervisor, usually by an inbriefing, is essential for inexperienced volunteers. Those we interviewed were unanimous in saying that before

Table **11.3** Coping strategies used in exposure to traumatic and disaster-related death

Stressor	Coping Strategy
Before exposure (waiting)	
Lack of information regarding tasks and roles	Training, preparatory briefing
Anticipating one's reaction to bodies	Inbriefing describing condition of remains
	Gradual exposure to the site with escort
During exposure (on site)	
Sensory overload	Avoidance or attenuation of strong stimuli
Handling victims' personal effects	Maintain emotional distance and emphasize the importance of the task
Fatigue and overdedication	Decrease and limit exposure to remains by work breaks, food, sleep, supervision
Intense personal feelings	Pairing with experienced personnel
	Supervisory support
	Humor
	Talking
	Maintain emotional distance and emphasize the importance of the task
Personal threat	Protective clothing, decontamination
	Information about possible risks
After exposure (postevent)	
Need for information	Outbriefing
	Education
Intense feelings (e.g., sadness, alienation)	Outbriefing
	Family and organizational support
	Awards
	Maintain personal perspective on events

volunteers enter a disaster scene they should be "told the worst" so as to minimize the surprises at the crash site or mortuary. In a recent disaster, a supervisor provided a sequence of short, staged preparation briefings in which he became more explicit as he moved volunteers from an initial assembly area to their eventual work site. This technique was reported afterwards to have been very helpful.

Experienced personnel expecting to be sent on an operation reported little psychological preparation. Nervousness was sometimes reported when they did not know what sort of trauma to expect, the condition of the bodies, or how difficult it would be to extract or identify the victims. One experienced dental pathologist reported that when he knew he would be the only professional on a recovery and identification operation he had nightmares the night before. When he knew he was going with others, he slept soundly.

During exposure to the dead (on site)

Individuals defend against the multiple sensory stimuli associated with the dead: the sights of the bodies (grotesque, burned, and mutilated), the sounds during autopsy (heads hitting tables and saws cutting bone), the smells of decomposing and burned bodies; and the tactile stimuli experienced as bodies are handled.

Workers often reported that they did not see badly damaged bodies as human. Supervisors facilitated this process of decreasing emotional involvement

(disidentification) by telling inexperienced volunteers, "Don't think of it as a body. Think of it as a job." Natural looking bodies were often seen as all too human. Such remarks as, "He can't be dead. He hardly has a scratch on him" were common. People reported many internal, automatic strategies by which they distanced themselves from the bodies, such as not looking at faces.

As mentioned previously, many people attempted to mask odors by burning coffee, smoking cigars, working in the cold and using fragrances such as peppermint oil and orange oil inside surgical masks (Cervantes, 1988). Most reported that such strategies did not help much in reducing the odors. Some olfactory adaptation did occur and workers generally dropped these strategies over time. Personnel who touch bodies or body parts almost always wear gloves. This decreases the tactile contact with the remains, which is particularly difficult with decomposed and burned bodies which are especially hard to handle due to the loss of tissue.

Past experience was frequently reported as helpful but it did not make one invulnerable. Even very experienced personnel could be shocked or surprised by the sight of the grotesque. An experienced pathologist reported extreme discomfort at the sight of a body whose shoulder girdle had been cleanly sliced by a helicopter blade. When he first saw the body, he did not recognize what had happened. When he did recognize the injury, he wondered whether the individual had felt the cut, suffered, or lived long after the injury. He continued to have intrusive images of this scene.

Physical fatigue was a frequent and significant stressor due to the long and irregular hours, little sleep, poor eating schedules, moving heavy loads, and minimal time to recuperate. The stress of the experience was reported to be reduced when the individual took frequent breaks or the supervisor acted to decrease the visual contact with bodies, such as by providing chairs that faced away from the bodies, or putting partitions between the identification stations. Overdedication contributed to the tendency to go on working under conditions that normally would not be tolerated. Even though breaks

were seen as desirable, at the Dover mortuary following the Gander air crash, for example, many individuals worked up to 20 h per day. Managers had to require some people to leave the area.

Some workers voluntarily left the scene because of nausea, fatigue or psychological discomfort. This did not always mean that the person was going to be ineffective. A senior noncommissioned officer reported:

I talked to some of the guys who worked Gander. There were days when they'd go in there and they would pick up an arm or a leg and they'd start thinking about what that arm used to be attached to and the fact that it was all burned up. They would have to walk outside of those plastic tents that they were working out of and sit down and have coffee, smoke a few cigarettes and just walk away for a day because on that particular day their psyche was not enough to deal with what they were seeing that day. The next day they were OK.

In general, grief and upset per se are not often observed on site because of feelings about one's public image. Most workers were concerned about how they would look in front of the other workers, both supervisors and subordinates. No one wanted to look like they "couldn't handle it." In response to the question of "What if the leaders are not able to be macho that day? Do you lose faith in them?" The answer from an experienced team leader was:

No, no, no! You can't lose faith in them. You have to talk to them and let them talk to you. "What was it that bothered you on that case?" Tell them that it's OK to get sick or say "Hey! I can't deal with it today." Because their psyche won't allow them to deal with that body that day, we can't think any less of them because tomorrow it might be our turn.

Unfortunately, such an attitude is not always present. We heard stories of supervisors laughing when someone said they "couldn't take it."

Everyone recognized humor as a substantial tension-reducer during and after operations. Humor was more common when the workers were out of public view. Most humor was still considered respectful. Some body handlers were frightened of black humor, feeling it reflected having gone over the edge, and becoming too hardened. The professional role identity of individuals who handled the dead

also facilitated coping with the psychological stress. The professional role was usually well defined. For nonprofessionals, roles had to be defined and reinforced by others. Often, a good time to define roles was during the inbriefing where the importance of each person's job was emphasized. For most volunteers, the idea that they were performing an important service for the dead, the families of the dead, and the community was very important.

The role of the medical examiner is well defined and of recognized importance. Curiosity and a sense of detective work helped sustain the medical examiners. They were frequently cautioned against becoming emotionally involved in their cases because their objectivity might be questioned in court. Being objective also served a protective function. In some situations, however, they were not able to avoid emotional involvement. Most reported that they did not like to do autopsies on children, friends, family members or torture deaths in which the suffering of the individual was obvious.

The mortician strives to do everything right because of the families. He or she takes pride in the cosmetic treatment of the deceased. This goal reinforced the idea that something memorable would be given to the survivors. Working to provide something memorable for the survivors can decrease feelings of helplessness in the face of death (Cassem, 1977).

The fire, police, and emergency medical service personnel are strongly motivated by the opportunity to save lives. Deaths often caused them to question their competence. In a fire rescue company when occupants of a house were found dead the firefighters said to each other, "They were dead before the bells went off!" meaning that the victims had probably died before the fire alarm had even sounded and they were not to blame.

The leader and the work group were inevitably seen as sources of support during difficult operations. The professional work group was the primary source of support. The presence of an experienced co-worker, especially for the uninitiated, was important. A new individual could share the tasks and the feelings with an experienced partner and decrease the shock and surprise of the initial exposure.

A large urban search and rescue fire company reported a very high level of social support and unit cohesion. During each shift, about 12 people lived together in a room that served as a kitchen, a dining room, and a living room at the rear of the firehouse near the vehicles. They were proud of their comradery:

We're like a family! We provide psychological first aid to each other – reassurance. All he, the guy next to you on the line, needs is the reassurance of someone else nearby.

Workers always noticed the support or lack of support by senior leaders and the organization as a whole. Volunteer body handlers at Dover Air Force Base after the Gander disaster were alert to whether their supervisor visited or their senior commanders expressed support (Maloney, 1988b).

After exposure (post event)

Disaster workers often needed help in the hours or days shortly after exposure to the dead. During this time, volunteers reported high levels of discomfort, both physical and psychological. Fatigue, irritability and a need for a transition "back to the real world" were commonly expressed. Experienced persons described themselves as doing what they had to in their mortuary work in order to get the job done; however, it was often at a high personal cost. The experience of professional support frequently came from a critique of the technical aspects of the work. One fireman pointed out that this sort of discussion had

Two phases – an individual phase and a group phase. You find out months or years later that something had bothered someone and you never found out about it before – he never talked about it. You argue about what had been wrong.

For almost everyone, professional counseling or psychiatric assistance, even if available, was generally viewed as unacceptable. Often this was due to fears that the person would be fired, could not successfully testify in court, would be ridiculed by fellow workers, or would lose their job. Most said

they did not really feel the need for counseling. However, almost all of those interviewed said they could have benefited from a brief talk about the experience, particularly if it involved the work group. Some wished it had even been mandatory.

Events occurring outside the mortuary often triggered intense feelings in the volunteer body handlers. While viewing a memorial service on television one man reported

I felt the grief they [the families] were going through. They started naming names – when they came to mine [the body he had escorted through the identification process], I went in the bathroom and cried and cried.

Another reported

Memorial services interfere with coping. At that point, it's no longer a job; it gets to be a name, a human being. You can't do both at the same time. You associate everything you do with each person. It all comes together.

Spouses of the body handlers were frequently unwilling to hear about the workers' experiences. At other times the workers themselves decided not to talk to their spouses about their disaster work. One man reported that his wife required him to take his clothes off at the door and shower after working with remains. Others described the stress of their first (and sometimes only) attempt at sharing feelings about their work with their spouses. Some said that they were unlikely to repeat the experience.

Somatic symptoms are common after exposure to death and the dead (Ursano et al., 1995). Interestingly, somatic symptoms were not explained by depressive symptoms present before exposure in a group of remains handlers (McCarroll et al., 2002). Military remains handlers working in the mortuary after the USS Iowa gun turret explosion in 1989 showed intrusive and avoidant symptoms elevated at 1, 4, and 13 months but these symptoms decreased over time (Ursano et al., 1995). Probable PTSD was present in 11% at 1 month, 10% at 4 months, and 2% at 13 months while depression was not increased.

The return to work was difficult for many, particularly when co-workers were not sympathetic or sensitive. Most workers appreciated some time off after the job was over. Some wanted to have time with their families; others wanted time alone. There was generally a feeling that those who had not been at the site could not fully understand the experience. This contributed to the difficulty of talking about the experience. People who came by the mortuary for only a visit were called "turistas."

Consistent with other reports (Maloney, 1988a, 1988b; Robinson, 1988) in the aftermath of an incident alcohol use was widely reported. Some workers reported that large amounts were consumed without intoxication while others reported that "getting smashed" was normal at the end of each day of an operation. Drinking also provided a social context for the work group and an opportunity to receive and provide support to each other. Some military workers reported that when the troops were restricted to one beer per evening, the restriction did not apply to body handlers. When several individuals were ordered away from a disaster site for rest, they reported returning to their rooms and drinking alcohol.

Discussion

Exposure to traumatic death is common in natural and manmade disasters and is a significant psychological stressor that can make victims of rescuers. The rescue worker is traumatized through the senses: viewing, smelling and touching, experiencing the grotesque, the unusual, the novel and the untimeliness of the death. The stress of body handling begins prior to the exposure with the anticipation. Nonvolunteers and those with no previous experience appear to experience more distress during this time. The extent and intensity of the sensory properties of the body such as visual grotesqueness, smell, and tactile qualities are important aspects of the stressor. It may be heuristically useful to consider exposure to human remains as a special category of toxic exposure in which such dimensions as the type of agent, frequency, intensity and duration of exposure all add to the risk of later stress reactions

(Bartone *et al.*, 1989), breakdown, disease or even psychological growth. Exposure to a child's mutilated body appears to be extremely toxic regardless of the age of the remains handler or whether that person has children.

There is often a paradox in people's reactions to traumatic material. Reactions tend to be both idiosyncratic and common. That is, one can predict that which is disturbing to most people (e.g., children's bodies, personal effects such as pictures, and a sense of revulsion at putrid smells), but there is also usually a personal reaction that is unique to the person. People will notice certain aspects of exposure to the dead that are not common. For example, an experienced forensic pathologist was somewhat bothered by a reaction to the bodies of victims that had been wrapped in gauze due to the fact that they would not be viewable by the family. When workers carried them, the wrapped remains reminded him of rag dolls, but he knew that they were not. Another person, upon seeing the distended jaws of dead victims who had had their jaw muscles cut for dental identification, thought that their faces looked like the faces of clowns.

Although all sensory modalities are involved in contact with a body, odor may have the greatest potential to re-create significant past episodes in a person's life. The strength of memory appears to vary with the special involvement a person has with the odor (Engen, 1987). The amount of forgetting of olfactory recognition memory, both long and short term, is very small and, thus, the accurate recognition of odors when encountered again is very high (Engen, 1987; Engen *et al.*, 1973). While odors are easily recognized, they are impossible to recall at will, which is fortunate for most persons exposed to the smells of death. One can easily remember the color and shape of an apple, but cannot conjure up its smell. There is a need for those who prepare food to be aware of the power of olfactory memory to vividly re-create a scene and to induce the reliving of some portion of the experience. Even though the recall of olfactory memory is relatively poor, we were informed of two cases of individuals who had served as remains handlers at

the Jonestown disaster who later received medical discharges from the military for PTSD. A complaint common to both individuals was waking up at night with a vivid recollection of the smells of the bodies at Jonestown (Orman, personal communication, 1989).

The meaning or social context of a death is an additional dimension of the stress felt by the individual body handler. The body itself as well as the memories of the individual (or group) can take on connotations not attributed to them in life. This change in the view of the dead by survivors has been termed the "social identity" of the dead (Sledge, 2005). For example, people who die in war can be identified as heroes when no heroics were involved in their death. On the other hand, the death of a drug dealer arouses less sympathy among policemen or medical examiners regardless of the manner of death or the condition of the body. The innocent, who are seen as victims, almost never fail to arouse feelings among those who deal with the remains. Interviewees who were body handlers during the Vietnam war talked about the stress of handling a large number of bodies of soldiers killed in action in an unpopular war. Deaths caused by friendly fire were similarly stressful. The deaths of these soldiers often seemed to have been a tremendous waste, which contributed to feelings of depression and hopelessness among the disaster workers.

The role of identification and emotional involvement in the production and resolution of the stress of handling dead bodies requires further study. Working with personal effects is an infrequently recognized, but powerful stimulus for the emotional involvement of the remains handler and subsequent distress. Such emotional involvement (for example, feelings of knowing the dead) appears to heighten the trauma of the experience. On the other hand, it may serve to eliminate the unfamiliar and the unknown qualities of the dead – changing what is new and novel into something familiar and part of the past (Ursano & Fullerton, 1990). The switching on of these cognitive mechanisms – identification, personalization, and emotional involvement – from

the trauma of association with dead bodies requires further study. Whether certain individuals are more prone to this perceptual style or whether it represents a basic biological mechanism that all individuals activate to varying degrees is unknown. Ways of decreasing identification and emotional involvement may be effective preventive measures.

The coping strategies used by rescue personnel differ in the before, during and after stages of disaster work. An informative and role-setting inbriefing is critical to the adjustment of the volunteer and will also be helpful to orient the experienced worker. This briefing helps form the context for much of what is later felt and seen. When it is not provided, volunteers may have greater difficulty adjusting to the scene and the work, and may fare poorly. However, no matter how well workers are briefed, there is always some shock to the reality of the situation.

The overwhelming nature of the sensory stimulation usually leads participants, particularly volunteers, to develop cognitive and behavioral distancing (avoidance) strategies. Failure to protect against emotional involvement with the victim is recognized by most workers as putting a person at risk for psychological distress. Scheduling is the job of the supervisor. Before fatigue sets in, which can contribute to emotional vulnerability, it is essential that managers establish schedules and ensure that rescue workers follow them. While there is little that supervisors can do about alcohol abuse off site, they can inform participants that the potential for alcohol abuse is high following exposure to trauma.

Transition out of the rescue work after exposure appears to be facilitated by an outbriefing where the workers can ask questions and information can be provided about the event, the body identification process, and community reactions. Statements of appreciation and recognition made at this time aid recovery. Family and organizational support is central during the transition period. When both the family and the primary work group show sensitivity and caring, the participant appears more likely to verbalize his or her feelings regarding what has been seen and done.

The personal experience of trauma is usually private and personal. Often it does not result in an outpouring or any expression of feelings at all. Such reactions are often personal and unobserved (McCarroll et al., 1995a). As a result, people often will not attend debriefing groups voluntarily or consult a mental health provider. Many rescue workers and volunteers will not share everything with people who were not present with them through the ordeal. Research has failed to consistently demonstrate that debriefing prevents postevent distress (Deahl, 2000; Gist et al., 1997; National Institute of Mental Health, 2002). There have been several reviews of the literature and summaries of the current status of debriefing in the array of techniques to help persons who have faced traumatic situations (Raphael & Wilson, 2000; Raphael & Wooding, 2004). Alexander (1993) cautions that while support groups are important, careful consideration must be given to the aims, methods, and composition. Along with the possibility of a positive effect, improperly run groups may have harmful effects (Kenardy, 2000). Groups with mixed exposure levels may be more likely to produce increased symptoms by exposure of those less exposed persons to the stories of those who were more exposed. It is important that outcomes other than PTSD be examined in debriefing studies (e.g., depression, substance abuse, work absences, and disability).

Numerous strategies are used to cope with the stresses of body handling. Most appear to be effective in the short run; however, which are more effective and their long-term consequences are unclear. Avoidance strategies appear to be effective during initial exposure to dead bodies. We do not know the effect of using such strategies over a longer time period. Reports from volunteers and experienced personnel indicate that at some point they can no longer avoid reminders of previous disasters. For example, names of the victims, the sight of an object, or a smell may bring the experience back. Such an experience may be helpful or harmful. The triggering of memories may help to work through the experience. On the other hand, the recall of unwanted memories can be disturbing and interfere with the

present tasks. It remains an open question when and under what circumstances the individual should be encouraged to talk or think about aspects of the disaster that were previously avoided.

Spouses of disaster workers need to be educated about their loved ones' experiences. Many workers claimed that they wished their spouses had been informed of the nature of their work. Information can be provided to spouses in order to allay their concerns and may reinforce this naturally occurring support system. Brief informational groups held for spouses can also be a useful intervention.

Inexperienced workers may be at higher risk for acute effects than experienced personnel. The latter, however, are not immune from suffering the same psychological discomforts as the volunteers. Some experienced personnel reported becoming somewhat calloused through repeated exposure, but no one believed it possible to be totally desensitized.

Additional research of this powerful stressor is needed to further describe its components and better understand the role of sensory stimulation in recall, particularly in PTSD, and the normal working through of traumatic events. Finally, not all results of disaster rescue work are negative. Volunteers almost unanimously report that they would volunteer again if another disaster occurred. People were proud of their contribution and of having done an important job that others either could not do or would never have the opportunity to do. It has been previously reported that most people do quite well following exposure to massive trauma. An important theoretical as well as practical question is how people use trauma to move toward health (Ursano, 1987).

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NOTE

1 Many people are sensitive about the words used to refer to the dead. "Remains" is considered the more respectful term. "Bodies" is more informal and occurs frequently in the medical literature. The terms are used interchangeably here.