CHAPTER

24

Individual Approaches to Prevention and Early Intervention

Teresa M. Au, Caroline Silva, Eileen M. Delaney, and Brett T. Litz

Abstract

This chapter provides an overview of individual and small group-based approaches for prevention and early intervention of posttraumatic stress disorder (PTSD). Using the Institute of Medicine's (IOM) classification system for preventive interventions of mental disorders (universal, selective, and indicated), we describe individual and small group early interventions and review the effectiveness of these strategies. Specifically, psychological debriefing, psychological first aid, and psychoeducation have been used as selective interventions targeting individuals exposed to trauma with varying degrees of success. However, there is strong empirical support for using cognitive behavioral therapy as an indicated preventive intervention to help symptomatic individuals in the weeks or months following traumatic exposure. A review of the literature also suggests that future research should explore different modes of delivery and devote more attention to determining the best time to intervene after traumatic exposure.

Key Words: Individual, small group, prevention, early intervention, posttraumatic stress, PTSD

Individual Approaches to Prevention and Early Intervention

Traumatic life events can have a devastating impact on individuals, families, and communities. Intervening soon after exposure to trauma has the potential to prevent long-term suffering and disability. The need for early/preventive interventions is underscored by the ubiquity of trauma exposure, as indicated by epidemiological studies estimating that 51–90% of the U.S. population experience at least one traumatic event in their lifetime (Breslau et al., 1998; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). Although most trauma-exposed individuals exhibit resilience or recover from transient distress using their own resources, many others suffer greatly and develop chronic mental and behavioral health problems (e.g., Bonanno, 2004).

One of the most enduring and destructive long-term consequences of trauma is posttraumatic stress disorder (PTSD). Approximately 9% of trauma-exposed individuals develop PTSD, although the rate of PTSD can exceed 50% for particularly egregious types of trauma, such as rape (Breslau et al., 1998; Kessler et al., 1995). Considering the tragically high prevalence of traumatic life events, this statistic translates into a significant amount of individual distress and a substantial public health burden. In addition, PTSD can persist for years, exerting a crippling toll on individuals across the life span (Kessler, 2000). Many individuals with PTSD do not seek treatment owing to stigma, financial barriers, uncertainty about where to go for treatment, and other personal and logistical concerns (Kessler, 2000). Without appropriate treatment, they endure considerable emotional, interpersonal, and

economic consequences (Kessler, 2000). Even with treatment, over 30% of PTSD cases persist for more than five years (Breslau et al., 1998; Kessler et al., 1995). Given the intractable and damaging nature of PTSD, preventing this disorder before it emerges and becomes ingrained is of great importance.

There are many considerations when implementing early interventions, including who to treat (i.e., who is vulnerable), when to intervene, and what interventions to use. Although researchers have begun to examine these issues, conclusive best practice recommendations await more empirical research, especially randomized clinical trials (RCTs). Thankfully, recent research has made substantial progress in elucidating which interventions are most effective for alleviating immediate distress and promoting lasting recovery. Because not all trauma-exposed individuals need early intervention (Bonanno, 2004; Litz & Bryant, 2009), research has focused on developing evidence-based early interventions for those who are most vulnerable to chronic posttraumatic difficulties and therefore most likely to benefit from prevention efforts. When evaluating these early interventions, it is important to bear in mind that trauma occurs in the context of interwoven personal, social, cultural, and environmental factors. Determining the best course of action in the midst of such complexity is formidable. Nevertheless, understanding the theory, evidence, and limitations behind current preventive strategies will help guide best practices in diverse settings.

In this chapter, we review models of preventive intervention, describe individual and small group early intervention strategies that are currently in use, and review the empirical evidence for those methods. We conclude with comments on future directions and a call for further research on early interventions.

Models of Intervention

In developing and evaluating early interventions, it is essential to weigh the likelihood of long-term posttraumatic impairment against the potential costs of intervening. For example, a given intervention may be highly effective at preventing a disorder, but it may not be worth implementing if the risk of developing the disorder is very low while the costs associated with intervening are high (e.g., financial burden, investment of time, energy, and resources, or unintended, negative iatrogenic effects). The Institute of Medicine (IOM) Committee on Prevention of Mental Disorders provides a useful organizing framework for conceptualizing the complex interactions between risk factors and outcomes. It defines prevention or early interventions as those that target individuals with no impairment or subclinical symptoms at most (Muñoz, Mrazek, & Haggerty, 1996). In the context of trauma, these interventions seek to prevent the onset of chronic PTSD and other enduring, negative psychological sequelae.

According to the IOM classification system, prevention can be categorized as universal, selective, or indicated, depending on who the intervention targets. All three types of preventive interventions can be implemented before or after a traumatic event. Universal preventive interventions target the general public or an entire subgroup (e.g., children, the elderly), regardless of individual risk (Mrazek & Haggerty, 1994). Examples of universal prevention include mass-media public health campaigns and school programs. Since universal prevention is the most inclusive strategy and may be applied even to those with little individual risk, the benefits should greatly outweigh the potential costs. The goal of universal prevention for PTSD is to prevent exposure to various preventable traumatic life experiences (e.g., car accidents) and to limit the impact of traumatic events that could affect anyone in the general population. Currently, there are no universal preventive interventions for PTSD that target the general public. However, within certain high-risk occupations there are universal prevention programs aimed at promoting resilience among all members, irrespective of individual risk (e.g., the Army's Comprehensive Total Fitness program; Geren & Casey, 2009).

Selective preventive interventions target high-risk groups, regardless of individual risk within the group. Biological, psychological, social, or environmental risk factors associated with the onset of a diagnosable mental health disorder can be used to identify these high-risk groups. Selective intervention does not entail individual assessment but, rather, infers risk simply from an individual's membership in a high-risk group. Considering the group's increased risk, interventions that incur moderate costs and minimal negative effects may be justified. In terms of preventing PTSD, some selective interventions target anyone exposed to trauma, irrespective of the event's individual impact. Targeting individuals with an elevated risk of PTSD, such as those with a history of childhood abuse, is another example of selective intervention.

Indicated preventive interventions specifically target individuals with detectable pre-clinical signs or symptoms of a mental disorder, but who do not meet diagnostic criteria at the time of examination. Indicated interventions to prevent PTSD would target individuals displaying pre-clinical signs of psychological distress and impairment as a result of

their exposure to trauma. Indicated interventions attempt not only to prevent the onset of PTSD and other trauma-related disorders but also to reduce the duration and severity of early traumatic stress symptoms. The disadvantage of some indicated interventions is that they may be high in cost or risk, without producing discernable benefits until months or years later.

The IOM taxonomy encourages an empirical, risk-benefit approach that weighs the costs and risks of an intervention against an individual's risk of acquiring a disorder (Mrazek & Haggerty, 1994). In contrast, other prevention models may not adequately differentiate between prevention categories, collapsing selective and indicated interventions into one category. The IOM framework therefore allows for more precise identification of individuals who may benefit from early intervention.

Description of Preventive/Early Interventions

For the remainder of this chapter, we discuss individual and small group selective and indicated early interventions for preventing chronic PTSD. Given that the onset of PTSD may be delayed (e.g., Andrews, Brewin, Philpott, & Stewart, 2007) and that trauma-related problems can last for years or even decades (Kessler et al., 1995), preventive/early interventions for PTSD can be employed in the time frame of hours, weeks, or several months following traumatic exposure (Litz & Gray, 2004). In the next section, we describe four main categories of interventions that have been applied to individuals and small groups to prevent long-term psychopathology shortly after traumatic exposure: (1) psychological debriefing, (2) psychological first aid, (3) psychoeducation, and (4) cognitive behavioral therapy. Later in the chapter, we review the empirical research findings for each of these early intervention categories.

Psychological Debriefing

Psychological Debriefing (PD) is a semi-structured, selective intervention that targets all individuals who have been exposed to a potentially traumatic event, regardless of their symptoms (Bisson, McFarlane, Rose, Ruzek, & Watson, 2009). PD normalizes posttraumatic stress symptoms, guides individuals to describe their thoughts, feelings, and symptoms resulting from the event, suggests coping strategies, and provides information on additional treatment options.

Although the PD category includes a diverse array of interventions, the most common form is Critical Incident Stress Debriefing (CISD), a single-session individual or small group-based discussion of the traumatic event. For nearly three decades, CISD has been widely disseminated and used throughout the world, with the goals of reducing acute distress and preventing long-term psychiatric morbidity in individuals exposed to traumatic events. CISD developers recommend using CISD only within the context of Critical Incident Stress Management (CISM), a comprehensive program that includes a diverse array of services, from feeding work crews to conducting family crisis interventions (Mitchell, 2004). However, in practice, CISD is most commonly administered as a stand-alone preventive intervention (McNally, Bryant, & Ehlers, 2003).

CISD is delivered shortly after traumatic exposure and provides a venue for survivors to engage in "emotional ventilation" by discussing their emotional reactions to the traumatic event (Everly, Flannery, & Mitchell, 2000). This discussion is led by a CISD facilitator who does not use formal psychotherapy techniques (Mitchell, 2003). Rather, the facilitator asks survivors to discuss what happened during the traumatic event and then to share what they thought and felt as it was occurring (Mitchell & Everly, 1996). Group members then identify and discuss any posttraumatic symptoms they may have experienced since the event (Mitchell & Everly, 1996). CISD also provides psychoeducation on common reactions to trauma and adaptive coping strategies (Mitchell & Everly, 1996). Proponents of CISD posit that the intervention reduces distress and helps survivors reestablish a sense of mastery and meaning by creating a social support system, promoting emotional ventilation, and teaching coping strategies (Everly et al., 2000).

Psychological debriefing has also been utilized in a military setting, in the form of a selective intervention called Battlemind Debriefing. Emphasizing a strength-based approach, the intervention uses the word *battlemind* to refer to service members' capacity for mental resilience. Battlemind Debriefing seeks to help military service members with the transition back to duty after they experience a potentially traumatic event during deployment. Similar to other types of PD, Battlemind Debriefing does not screen for symptoms and includes the entire group (e.g., everyone in a platoon) that was directly or indirectly exposed to the event, regardless of symptom presentation. Battlemind Debriefings are administered in a group format and ideally use two facilitators, including one who is a trusted, well-respected fellow service member (Adler, Castro, & McGurk, 2009). By involving all ranks of the platoon, including

leadership, Battlemind Debriefing seeks to promote a strong peer support system. Facilitators guide service members in acknowledging significant combat or deployment events, reviewing common reactions, and discussing actions that can be taken to facilitate their transition back to duty. In contrast to CISD, Battlemind Debriefing avoids recounting traumatic events in a detailed manner, increases expectations of resilience and functioning, and emphasizes use of natural social supports including peers, leaders, and family (Adler et al., 2009).

Psychological First Aid

Psychological First Aid (PFA) is a selective intervention that utilizes evidence-informed helping actions to reduce immediate distress and promote short- and long-term functioning in trauma-exposed individuals (Brymer et al., 2006; Ruzek et al., 2007). Due to the lack of evidence supporting CISD (discussed later in this chapter), PFA has become the prescriptive approach to early intervention for direct victims, first responders, and care providers in the aftermath of disasters. PFA is designed to address individuals' acute needs in the hours or days after a traumatic event, although the time frame may vary depending on whether or not there is continued exposure to an ongoing traumatic event, as in the case of a natural disaster. Mental health and disaster response workers can deliver PFA in a variety of settings, including shelters, emergency rooms, family assistance centers, and triage centers.

As described in the PFA Field Operations Guide (Brymer et al., 2006), PFA adopts a nonintrusive, flexible, and pragmatic approach. Using practical, hands-on strategies, PFA helps survivors navigate through the chaos, confusion, and disorganization that often accompany potentially traumatic events. Rather than focusing on emotional disclosure and details of the event as in CISD, PFA attends to basic needs in the present and provides practical assistance (Ruzek et al., 2007). It acknowledges that experiencing a wide variety of physical, psychological, and behavioral reactions is common and does not always lead to psychopathology or lasting impairment (Brymer et al., 2006). To avoid pathologizing normative, acute distress, PFA providers do not use jargon and terms such as "symptom" or "disorder." PFA also respects developmental and cultural differences, detailing specific ways that providers can practice cultural sensitivity and adapt their strategies for child, adolescent, and elderly populations (Brymer et al., 2006).

PFA intervention strategies fall into eight main categories, or core actions. These eight core actions are derived from research and theory on risk and resiliency after potentially traumatic events. A large body of research indicates that feeling safe, calm, efficacious, connected, and hopeful promotes adaptive functioning in trauma survivors (reviewed in Hobfoll et al., 2007; Ozer, Best, Lipsey, & Weiss, 2003). PFA techniques therefore center on reducing perceived threat, attenuating heightened emotionality and physiological reactivity, fostering belief in one's ability to manage the traumatic event, promoting social support, and instilling positive expectations (Hobfoll et al., 2007; Ruzek, 2008).

The first core action, contact and engagement, involves initiating contact with survivors in a compassionate, nonintrusive manner to establish the PFA provider as a potential source of help. The second core action, safety and comfort, assists survivors with practical concerns and basic needs (e.g., locating medical care) and offers emotional support. Stabilization, the third helping action, targets individuals whose stress reactions significantly interfere with basic functioning or important responsibilities (e.g., sleeping, eating, parenting). To stabilize these individuals, PFA providers may use "grounding" techniques that orient individuals to nondistressing sights, sounds, and sensations. The fourth essential component of PFA, information gathering, involves asking survivors for information in a culturally and contextually appropriate manner to identify acute needs and concerns, assess risk, and assist future planning. Nonintrusive information-gathering techniques (e.g., inquiring about social support and substance use in a normalizing, respectful manner) can be used to systematically assess factors known to increase likelihood of posttraumatic difficulties (Brymer et al., 2006). The fifth core action, practical assistance, employs strategies to help survivors prioritize their needs and develop a concrete action plan. PFA's sixth core action, connecting with social supports, focuses on identifying family members, friends, or members of the community who can provide the individual with ongoing emotional support, guidance, a sense of connectedness, or assistance with practical tasks. The seventh core component of PFA, information on coping, provides trauma survivors with information on psychological and physiological stress reactions, healthy ways of coping, and maladaptive coping responses to avoid or monitor. The final core action, linkage with collaborative services, connects survivors with further services (as appropriate) and facilitates a smooth transition to these services.

Psychoeducation

Psychoeducation generally entails providing information about stress and trauma; behavioral,

psychological, and physiological reactions to trauma; and coping techniques (Kilpatrick, Cougle, & Resnick, 2008; Ruzek, 2008). It is employed as part of an overall "package" in most forms of early intervention, including PFA (Brymer et al., 2006), CISD (Mitchell & Everly, 1996), and cognitive behavioral therapy (e.g., Bryant, Harvey, Dang, Sackville, & Basten, 1998). However, psychoeducation has also been used as a stand-alone preventive strategy, often in the form of self-help booklets, handouts in hospitals and clinics, or brief videos (Creamer & O'Donnell, 2008; Resnick, Acierno, Kilpatrick, & Holmes, 2005; Wessely et al., 2008). More recently, informational material on trauma and PTSD has proliferated on the Internet, appearing on websites for health organizations such as the Centers for Disease Control and Prevention (CDC), National Institute of Mental Health (NIMH), World Health Organization (WHO), and The National Center for PTSD, exponentially increasing the number of people who have access to this information (e.g., National Institute of Mental Health [NIMH], 2008). Considering its ubiquity as a stand-alone preventive strategy, psychoeducation can be conceptualized as an intervention in itself.

At the broadest level, psychoeducation seeks to help trauma survivors understand and manage their reactions to trauma (Ruzek, 2008). By normalizing transient stress reactions, psychoeducation aims to reassure individuals who have those symptoms and reduce their distress (Wessely et al., 2008). Providing accurate information about posttraumatic reactions has the potential to correct maladaptive appraisals regarding the traumatic event and its sequelae (Ehlers et al., 2003; Wessely et al., 2008). Psychoeducation also helps individuals identify and assess trauma-related problems and directs them to appropriate resources, presumably making it more likely that they will seek help if needed (Hobfoll et al., 2007; Pratt et al., 2005).

Psychoeducation materials lend themselves well to a self-help format, which may be more palatable for individuals who would not normally seek help for personal, social, financial, or logistical reasons (Kessler, 2000). Incorporating some contact with healthcare professionals could enhance the benefits of psychoeducation, since they can tailor the information to the needs of the individual and ensure that the individual understands the material (Ruzek, 2008). Sophisticated websites can also assess comprehension, provide feedback, and offer individualized, interactive educational experiences (Hobfoll, Walter, & Horsey, 2008).

Cognitive Behavioral Therapy

In recent years, cognitive behavioral therapy (CBT) techniques have been increasingly used in indicated preventive interventions. Exposure-based CBT is a well-validated treatment for chronic PTSD (Ponniah & Hollon, 2009) and has been adapted to prevent chronic PTSD in trauma-exposed individuals exhibiting posttraumatic symptoms. Preventive and treatment strategies differ in the timing of the intervention (i.e., when it is initiated), whether individuals currently meet criteria for PTSD, and the overall aim of the intervention (i.e., preventing vs. alleviating the disorder).

Used as an early intervention, CBT typically includes the following techniques: psychoeducation, anxiety management, exposure, and cognitive restructuring (e.g., Bryant et al., 1998; Sijbrandij et al., 2007). Although these CBT strategies are most often used together, they have also been employed separately (e.g., Bryant, Sackville, Dang, Moulds, & Guthrie, 1999; Bryant et al., 2008). Another related technique that has been used as an early intervention is Behavioral Activation (BA), which is derived from behavioral therapy (Wagner, Zatzick, Ghesquiere, & Jurkovich, 2007). Whichever form it takes, CBT uses a collaborative, action-oriented approach that emphasizes homework completion outside of therapy sessions to enhance patients' self-efficacy and encourage them to utilize CBT skills in their daily lives. CBT interventions are highly structured yet are usually tailored to meet individual needs.

CBT preventive interventions usually begin with psychoeducation. As described earlier, psychoeducation is not unique to CBT but is nearly always included in CBT interventions. In addition to providing general information about the stress response and common reactions to trauma, CBT-based psychoeducation teaches patients about the relationships among thoughts, feelings, and behaviors, and how they work together to maintain posttraumatic symptoms. This understanding provides a rationale and framework for subsequent CBT techniques, such as cognitive restructuring and exposure.

Most CBT interventions also include an anxiety management component. Patients learn techniques such as deep, slow diaphragmatic breathing and progressive muscle relaxation, which they are instructed to practice daily. Patients are also shown how to use these strategies to manage negative affect and arousal when they encounter trauma-related triggers (Litz & Bryant, 2009).

A pivotal component of most CBT interventions is cognitive restructuring or exposure, or a combination of the two. Cognitive restructuring rests on the premise that the interpretation of an

event, not the event itself, determines emotional states (Beck, Rush, Shaw, & Emery, 1979). From this perspective, PTSD symptoms are considered to be caused by distorted and unhelpful thoughts regarding the traumatic experience and its aftermath. Therapists teach a variety of cognitive restructuring techniques to help patients alter maladaptive thoughts and beliefs, such as examining evidence for and against their belief. It is believed that once patients begin using these techniques to challenge and ultimately replace their unhelpful cognitions, they will also experience emotional and behavioral changes. Beliefs that are targeted often include appraisals of safety, trust, power, control, esteem, and intimacy (e.g., McCann & Pearlman, 1990).

Exposure therapy is a key component of most CBT preventive interventions. During exposure exercises, patients are guided by the therapist to recount the traumatic event in the present tense (i.e., imaginal exposure) and gradually confront situations that are typically avoided because they trigger disturbing memories, thoughts, or emotions about the trauma (i.e., graded in vivo exposure; e.g., Foa et al., 1999). During exposure exercises, patients are prevented from engaging in avoidance behaviors. Once avoidance is no longer reinforced, conditioned responses, such as intrusive memories and anxiety, are extinguished through habituation. By approaching situations that were once avoided, patients gradually learn to tolerate trauma-related cognitions and situations, increasing the opportunities for corrective life experiences and subsequently modifying maladaptive trauma-related appraisals (e.g., engaging in positive social interactions will challenge the belief "I will never be able to trust anyone again").

Behavioral Activation (BA), a type of behavioral therapy, has also shown promise as a preventive intervention (Wagner et al., 2007). Originally employed as a component of cognitive therapy to treat depression, BA has proved to be an effective stand-alone intervention (Jacobson et al., 1996) and has recently been adapted for preventing and treating PTSD (Jakupcak et al., 2006; Mulick & Naugle, 2004; Wagner et al., 2007). BA prompts individuals to identify and complete reinforcing activities that move them toward their long-term goals (Kanter et al., 2010). As they progress through treatment, patients are encouraged to be proactive rather than reactive to their moods and thoughts and to monitor their moods as they engage in different types of activities. Similar to exposure therapy, BA targets avoidance behaviors, which produce reinforcing, short-term reductions in anxiety but maintain elevated levels of anxiety in the long term by blocking habituation (Keane, Fairbank, Caddell, Zimering, & Bender, 1985). Unlike exposure, BA does not focus exclusively on activities that are avoided due to their potential to provoke fear and anguish (Mulick & Naugle, 2004; Wagner et al., 2007). Rather, BA seeks to identify and increase activities based on what is important to the individual and in line with his or her goals, which may or may not include trauma-related activities or situations that are avoided out of fear. Like other CBT preventive strategies, BA is brief and cost-effective (Wagner et al., 2007). Compared to cognitive restructuring and exposure, BA is relatively straightforward, does not require as much specialty training by the therapist, and may be easier for the patient to tolerate (Mulick & Naugle, 2004; Wagner et al., 2007).

Empirical Research Findings

In the following section, we discuss the empirical evidence for PD, PFA, psychoeducation, and CBT as preventive/early interventions. In evaluating the efficacy of these preventive interventions, a number of methodological issues frequently arise. Ethical, practical, and economic considerations often limit researchers' ability to conduct controlled trials immediately after a traumatic event. For instance, randomizing trauma survivors to different intervention conditions (e.g., no-treatment control conditions) may not be feasible or ethical. Despite these constraints, there is a push for greater methodological rigor. As argued by Foa and Meadows (1997), even where randomized controlled trials (RCTs) are not possible, studies should strive to clearly specify the targeted symptoms, use psychometrically sound measures, demonstrate reliable and valid assessment procedures, employ manualized and replicable interventions, and evaluate treatment adherence.

Psychological Debriefing

Single-session psychological debriefing (PD) delivered in the immediate aftermath of trauma has great intuitive appeal but has not been supported by well-controlled studies. Initially, uncontrolled studies suggested that CISD was effective in reducing distress and promoting recovery in the aftermath of trauma (reviewed in Everly, Flannery, & Eyler, 2002; Everly et al., 2000). Proponents of CISD hailed its success across thousands of debriefings and claimed that empirical studies had definitively proved CISD's effectiveness (Mitchell & Everly, 2001). However, since the majority of these studies were not scientifically rigorous, the observed

benefits could not be attributed to CISD versus natural recovery processes. In addition, many of these studies were cross-sectional and only assessed participants at a single time point after the intervention (reviewed in Everly et al., 2000; Gray & Litz, 2005).

In recent years, RCTs have challenged the efficacy of CISD. These studies have used rigorous methodology, including random assignment to treatment, psychometrically validated outcome measures, and structured clinical interviews for assessments (reviewed in Litz, Gray, Bryant, & Adler, 2002). In these RCTs, trauma survivors randomly assigned to receive CISD exhibited reductions on several measures of psychological distress (Conlon, Fahy, & Conroy, 1999; Deahl et al., 2000; Rose, Brewin, Andrews, & Kirk, 1999), as previously observed in uncontrolled studies supporting CISD. However, these RCTs found that no-treatment control conditions resulted in equivalent improvements, indicating that CISD was no more effective than receiving no treatment at all. Furthermore, several RCTs found that CISD was associated with worse outcomes compared to no-treatment (Bisson, Jenkins, Alexander, & Bannister, 1997; Hobbs, Mayou, Harrison, & Worlock, 1996; Mayou, Ehlers, & Hobbs, 2000). Meta-analytic studies have confirmed that single-session PD is no better, and in some cases slightly worse, than no-treatment or educational control groups at reducing distress, general psychological morbidity, PTSD, depression, and anxiety (Rose, Bisson, Churchill, & Wessely, 2002; van Emmerik, Kamphuis, Hulsbosch, & Emmelkamp, 2002). Collectively, these findings argue against applying CISD as a blanket preventive intervention for individuals exposed to trauma.

Various theories have been proposed to explain why CISD has had a small detrimental effect on trauma survivors in some cases. One explanation is that CISD may unintentionally interfere with natural recovery processes by substituting preexisting support networks with an artificial source of support (van Emmerik et al., 2002). Deleterious outcomes associated with CISD may also be due to its medicalization of normal distress. Although CISD aims to reduce distress by normalizing posttraumatic stress symptoms, it may paradoxically heighten distress by increasing participants' expectations that they will develop these symptoms (Devilly, Gist, & Cotton, 2006). Another possibility is that CISD prompts individuals to relive their traumatic experience and engage in emotional ventilation but does not incorporate sufficient repetition to habituate them to trauma-related cues (McNally et al., 2003). Without adequate follow-up care, this process may only exacerbate distress. Indeed, a dismantling study found that emotional ventilation increased PTSD symptoms among trauma survivors with high initial hyper-arousal symptoms, compared to those who received psychoeducation debriefing or no treatment (Sijbrandij, Olff, Reitsma, Carlier, & Gersons, 2006). These findings suggest that emotional ventilation can prolong or even escalate psychological and physiological arousal in individuals who have increased reactivity immediately after a traumatic event (Sijbrandij et al., 2006).

Proponents of CISD have rebutted that the RCTs showing null or adverse effects did not adequately evaluate CISD because they neglected clinically important outcomes, did not adhere to prescribed CISD procedures, and misapplied the intervention to primary (direct) victims of trauma instead of high-risk occupational groups, for which CISD was originally devised. A RCT addressing these issues, however, was still unable to find clear evidence that CISD produced better outcomes than no treatment or a psychoeducational stress management class (Adler et al., 2008). Supporters of CISD further counter that CISD was never intended as a single-session treatment but as part of the larger Critical Incident Stress Management (CISM) package (Mitchell, 2004). However, as noted by McNally et al. (2003), CISM does not readily lend itself to empirical investigation since it is not an intervention but an administrative framework with disparate components determined by the specific context. Furthermore, despite the developers' recommendation, CISD is almost always administered as a stand-alone treatment without implementing other parts of CISM (McNally et al., 2003). Owing to the lack of evidence for CISD's efficacy, current policy guidelines in the United Kingdom and United States now advise against its use (e.g., National Institute for Health and Clinical Excellence, 2005).

On the other hand, non-CISD forms of single-session PD have shown some promise. In particular, a recent study showed that Battlemind Debriefing reduces negative psychological sequelae in soldiers following combat exposure (Adler et al., 2009). In this study, platoons were randomized to receive either standard postdeployment stress education or Battlemind Debriefing. Follow-up assessment four months after the intervention revealed that soldiers who received Battlemind Debriefing had fewer PTSD symptoms, depressive symptoms, and sleep problems compared to the stress education group, but only for those exposed to high levels of combat. In contrast to studies showing adverse effects of CISD, Battlemind Debriefing did not increase symptoms immediately after the intervention or at

the four-month follow-up assessment. However, since effect sizes in this study were small and a no-intervention control group was not included, firm conclusions about the efficacy of Battlemind Debriefing cannot be made at this time. Although this study suggests that non-CISD PD may be helpful—or at least not harmful—for at-risk occupational groups, further studies are needed to replicate these results and evaluate the efficacy of specific Battlemind Debriefing components.

Psychological First Aid

Psychological First Aid (PFA) is based on a solid conceptual framework (Litz, 2008) and a broad evidence base from the risk and resilience literature (Hobfoll et al., 2007). Because its core components are informed by empirical evidence, there is a growing consensus among disaster mental health experts that PFA is the "acute intervention of choice" (Brymer et al., 2006, p. 5). Although PFA as a whole has not been systematically investigated, research on stress, coping, and positive adaptation following traumatic events support the utility of the core components (Hobfoll et al., 2007, Ozer et al., 2003; Ruzek et al., 2007; Vernberg et al., 2008). One of the challenges in empirically evaluating PFA is that it seeks to produce short- and long-term outcomes that are not conventionally assessed. For example, PFA aims to increase survivors' sense of safety and connectedness with others, reduce immediate distress, enhance self-efficacy for addressing immediate practical needs and making important decisions, and increase help-seeking behavior (Ruzek et al., 2007). Researchers are currently developing appropriate tools to measure these outcomes and evaluate provider adherence to PFA guidelines (Vernberg et al., 2008).

Psychoeducation

It is commonly assumed that providing psychoeducation as a stand-alone preventive intervention is beneficial or at least does no harm. Unfortunately, only a handful of studies have directly evaluated the efficacy of psychoeducation and have found equivocal results (reviewed in Wessely et al., 2008). In one RCT, civilian trauma victims were randomized to receive a psychoeducational self-help booklet that provided information on typical posttraumatic symptoms and the benefits of social support and nonavoidance (Turpin, Downs, & Mason, 2005). Despite participant reports that the psychoeducation material was helpful, the psychoeducation group did not report greater reductions in PTSD symptoms, depression, or anxiety compared to those who received no psychoeducation. Furthermore, at six-month follow-up, participants in the psychoeducation condition had experienced smaller reductions in depression than those in the no-treatment control condition. In addition, among participants who initially met criteria for PTSD, fewer participants in the psychoeducation group improved relative to those in the control group, although this difference did not reach statistical significance. This study suggests that the use of self-help psychoeducational material alone is ineffective for reducing psychological distress after traumatic exposure, and like CISD, it may actually impede naturally recovery processes. Similarly, another RCT that randomized participants with acute stress disorder to receive either a self-help psychoeducational booklet or no information found no differences between the two conditions in terms of PTSD, anxiety, or depression, yet participants rated the self-help information favorably (Scholes, Turpin, & Mason, 2007).

Other evidence suggests that psychoeducation may be helpful in certain situations. For instance, Resnick et al. (2007) found that a short psychoeducation video produced reductions in PTSD and depression symptoms for sexual assault survivors with a prior history of assault, compared to survivors in a no-intervention control group. Since having a history of prior rape is a risk factor for PTSD, this finding indicates that a brief psychoeducation intervention could benefit at-risk populations. However, this positive result is tempered by the concerning finding that women without a history of sexual assault experienced slight elevations in PTSD and anxiety symptoms after watching the psychoeducation video, compared to no-intervention controls, although this difference was no longer apparent at six-month follow-up.

As a whole, these findings indicate that even a seemingly innocuous intervention such as psychoeducation must be applied with caution, as it may lead to adverse consequences if applied indiscriminately to all individuals exposed to a traumatic event. Preliminary evidence suggests that psychoeducation may benefit only those who are more at risk for developing PTSD (Resnick et al., 2007). These findings speak to the need for more studies to investigate the effect of psychoeducation on different populations. Additionally, the content of psychoeducation varies considerably, with some emphasizing expectations of resilience (Resnick et al., 2007) and others providing detailed instructions on imaginal exposure (Scholes et al., 2007). Given this heterogeneity among psychoeducation interventions, future studies are needed to systematically refine and evaluate the content, format, and delivery of psychoeducation (Kilpatrick et al., 2008; Ruzek, 2008). There is also a need to

measure outcomes that psychoeducation supposedly targets, such as help-seeking behavior (Wessely et al., 2008).

Cognitive Behavioral Therapy

Most cognitive behavioral therapy (CBT) preventive interventions have used an indicated approach, targeting those who have early signs or symptoms of PTSD but do not yet meet criteria for chronic PTSD. Symptomatic individuals have been targeted due to economic and logistical constraints, as well as evidence that selective preventive interventions applied to all trauma-exposed individuals irrespective of symptoms are ineffective (Roberts, Kitchiner, Kenardy, & Bisson, 2009). Inclusion criteria for CBT preventive interventions vary across studies, from acute symptoms of psychological distress (e.g., Bisson, Shepherd, Joy, Probert, & Newcombe, 2004; Zatzick et al., 2004), to acute stress disorder (ASD; e.g., Bryant et al., 1998), or acute PTSD (e.g., van Emmerik, Kamphuis, & Emmelkamp, 2008). Treatments for ASD can be conceptualized as indicated prevention for PTSD since prospective studies have shown that approximately 80% of people with ASD meet criteria for chronic PTSD six months after the trauma (Harvey & Bryant, 1998). A diagnosis of ASD can therefore be used to identify trauma victims who are less likely to recover without intervention.

Several well-designed trials have demonstrated that trauma survivors with ASD benefit more from preventative CBT than from supportive counseling (SC). In one of the earliest trials, when civilian trauma survivors with ASD received either five sessions of CBT or SC, only 8% of individuals in the CBT condition were diagnosed with PTSD at posttreatment, compared to 83% in the SC condition (Bryant et al., 1998). At six-month follow-up, 17% of participants in the CBT condition met criteria for PTSD compared to 67% in SC. At both posttreatment and follow-up, CBT was more effective in reducing depressive, avoidance, and intrusive symptoms compared to SC.

The same research group has replicated these findings across several trials, in each case showing the superiority of CBT over SC (Bryant, Moulds, Guthrie, & Nixon, 2005; Bryant et al., 1999). Long-term benefits from these interventions have also been observed. For example, one follow-up study found that 8% of trauma survivors who participated in a brief CBT preventive intervention were diagnosed with PTSD four years after traumatic exposure, compared to 25% of SC patients (Bryant, Moulds, & Nixon, 2003). In addition, severity of PTSD symptoms, particularly avoidance behaviors, remained lower for the CBT group relative to the SC group at four-year follow-up assessment (Bryant et al., 2003).

Since the above studies compared CBT to SC and not to an untreated control group, it is possible that CBT only appears effective because SC disrupts natural recovery processes (Ehlers & Clark, 2003; Litz & Bryant, 2009). However, other trials comparing CBT to no-treatment or other control groups have also observed greater beneficial outcomes associated with CBT. For instance, one RCT found that rape victims with acute PTSD who completed a five-session CBT intervention reported fewer PTSD symptoms at 12-month follow-up than those who received only relaxation training (Echeburua, de Corral, Sarasua, & Zubizarreta, 1996). In another study, individuals in acute psychological distress 5–10 weeks after a traumatic physical injury were randomized to a four-session CBT intervention or to a standard-care condition (Bisson et al., 2004). At 13-month follow-up, CBT patients reported greater reductions in PTSD symptoms compared to standard-care patients. However, the effect size was modest and there were no between-group differences in anxiety or depressive symptoms.

Clearer differences between CBT and no treatment were found in a RCT that tested a cognitive restructuring-focused CBT intervention on motor vehicle accident (MVA) survivors suffering from acute PTSD (Ehlers et al., 2003). In this trial, at three-month follow-up, participants in the CBT intervention group reported the greatest reductions in functional impairment and PTSD, depression, and anxiety symptoms, compared to those who received a CBT-based self-help booklet and those who were repeatedly assessed but received no treatment. These gains remained at nine-month follow-up, with fewer participants in the CBT group meeting criteria for PTSD compared to the other two groups.

Nearly all of the RCTs evaluating CBT as a preventive intervention have employed a variety of techniques, commonly using both cognitive restructuring and exposure techniques, thereby precluding any clear conclusions about possible agents of change. To evaluate the individual efficacy of different techniques for preventing chronic PTSD in patients with ASD, Bryant et al. (2008) compared exposure therapy, trauma-focused cognitive restructuring, and a wait-list control condition. Both cognitive restructuring and exposure were effective at reducing PTSD compared to wait-list controls, but exposure resulted in better outcomes than cognitive restructuring. At posttreatment, 33% of exposure participants met criteria for PTSD, compared to 63% of individuals treated with cognitive restructuring and 77% of the wait-list control group. Compared to

cognitive restructuring, exposure also produced significantly larger reductions in PTSD, anxiety, and depressive symptoms. Nevertheless, since cognitive restructuring was more effective than no treatment, it may still be useful on its own, as an alternative for those who are unwilling or unable to tolerate exposure therapy.

In another dismantling study, an exposure-only condition was compared against exposure with anxiety management (Bryant et al., 1999). Six months later, the incidence of PTSD was lower in both the exposure-only and exposure with anxiety management conditions (15% and 23%, respectively), compared to SC. The two exposure groups did not differ significantly on any outcome measures, suggesting that anxiety management does not enhance the benefits of exposure. This result is consistent with the chronic PTSD treatment literature, which has found that anxiety management alleviates distress in the short term but that exposure yields more lasting reductions in PTSD symptoms (Foa, Rothbaum, Riggs, & Murdock, 1991).

There is emerging evidence that other CBT tools such as BA may also be useful as an indicated preventive intervention. A small-scale randomized effectiveness trial found that BA, consisting of up to six sessions, was more effective at reducing PTSD symptoms than treatment as usual for ASD patients (Wagner et al., 2007). However, BA was not associated with greater reductions in depressive symptoms compared to the control group. Considering that many clinicians may avoid using exposure because of the distress it can cause in the short-term (Rosen et al., 2004), it is important to continue evaluating non-exposure-based forms of CBT such as BA. Future studies are needed to replicate Wagner et al.'s findings and compare BA against other CBT strategies, such as exposure.

Although the evidence in favor of using CBT strategies to prevent chronic PTSD is compelling, some findings have been mixed. Sijbrandij et al. (2007) found that one week after treatment, people with acute PTSD who had received four sessions of CBT (consisting of psychoeducation, anxiety management, imaginal and in vivo exposure, and cognitive restructuring) experienced reductions in PTSD symptoms compared to wait-list controls. However, the two groups did not differ significantly on PTSD, anxiety, or depression at four-month follow-up. These data suggest that CBT hastened recovery from acute PTSD, but these benefits were not maintained at long-term follow-up. The authors speculated that the lack of efficacy at follow-up could be due to the fewer number of sessions compared to other early interventions (e.g., Bryant et al., 1999; Ehlers et al., 2003).

Similarly, Foa, Hearst-Ikeda, and Perry (1995) found that a four-session CBT intervention initially reduced PTSD symptoms, so that at posttreatment, only 10% of CBT participants met PTSD criteria compared to 70% of those in the no-treatment control group. At 5.5-month follow-up, CBT participants reported significantly fewer depressive symptoms relative to those in the control group. However, by this point, the control group had improved in terms of PTSD symptoms and no longer differed from the CBT group on PTSD diagnosis. This study supports the notion that CBT accelerates recovery even if it does not produce lasting prevention against chronic PTSD. In a larger trial, Foa, Zoellner, and Feeny (2006) found that a four-session CBT intervention, administered to individuals with acute PTSD several weeks after traumatic exposure, did not lead to long-term differences in PTSD, depression, or anxiety symptoms compared to SC or a no-treatment, assessment-only condition. However, there was some evidence that the CBT intervention accelerated recovery for sexual-assault survivors with severe PTSD symptoms. The authors proposed several factors that may account for the lack of long-term benefit associated with CBT, including demographics, type of trauma, and reduced homework compliance.

These null findings notwithstanding, a recent meta-analysis of 15 early interventions found that CBT produced better outcomes at posttreatment than wait-list or SC for individuals with traumatic stress symptoms (Roberts et al., 2009). All of the studies included in the meta-analysis had evaluated indicated interventions administered within three months of trauma exposure. The largest reductions in traumatic stress symptoms were seen in individuals who met criteria for ASD or acute PTSD before receiving CBT. In a separate analysis, Roberts et al. (2009) also investigated the efficacy of multiple-session interventions applied globally to all trauma-exposed individuals, regardless of their symptoms. In contrast to the positive outcomes produced by the indicated interventions targeting symptomatic individuals, no evidence was found for the efficacy of selective interventions targeting trauma-exposed individuals irrespective of their symptoms.

Although the evidence that CBT effectively prevents chronic PTSD and other negative psychological sequelae is compelling, there are many remaining questions. Although the empirical data strongly indicate that CBT is effective while psychological debriefing is not, it remains unclear precisely which components account for this

difference. Factors that may explain this differential efficacy include CBT's prolonged, systematic method of disclosure and processing, targeted nature, increase in structure, longer duration of treatment, and homework exercises assigned between sessions, which likely promote self-efficacy and generalization of acquired skills. Determining the critical components of CBT is complicated by the heterogeneity among CBT interventions, in terms of specific techniques used, amount of exposure, duration, timing, and population targeted. Although most CBT preventive interventions incorporate exposure strategies, others focus more on cognitive techniques (Ehlers et al., 2003), and still others do not include an exposure element at all (Bryant et al., 1999; Wagner et al., 2007). Additional dismantling studies would help to identify possible change agents in preventive CBT interventions.

Limitations and Promising Future Directions

Much progress has been made in identifying and evaluating interventions for preventing chronic psychopathology after traumatic events. Although early intervention research has focused primarily on determining which particular intervention strategies are most effective, several related areas need to be explored. Possible areas that require further examination include intervention content and form (e.g., different modes of delivery, other potentially effective treatments), assessment issues (e.g., measuring other outcomes of interest, how to best screen individuals for distress), and logistical concerns (e.g., when is the best time to intervene).

There is strong empirical support for using CBT as a brief, indicated preventive intervention to help symptomatic individuals in the weeks or months following traumatic exposure. However, additional research is needed to better understand how CBT works (i.e., what are the change agents) and whether it is more effective for certain types of events or for particular subgroups of individuals. It remains unclear what factors mediate symptom reduction and improvements in functioning. Potential mediators that could be examined in future studies include process variables, such as instilling hope, self-efficacy, and acceptance, as well as learning specific strategies/behaviors, such as nonavoidance and cognitive restructuring (Litz, 2008).

Further attention should also be paid to the particular contexts for which early CBT interventions may be most efficacious. CBT has been tested and has proved effective for symptomatic civilians who have survived industrial accidents, nonsexual assault, and motor vehicle accidents (e.g., Bryant et al., 1998, 1999; Ehlers et al., 2003). However, early interventions for female sexual assault survivors have been effective in some studies (Echeburua et al., 1996) but ineffective in others (Foa et al., 2006), emphasizing the need for more research on adapting preventive interventions to treat other types of trauma, such as sexual assault and combat trauma. Additionally, as a preventive intervention, CBT has only been tested in an individual therapy format. Adapting CBT to a group format would conserve resources and potentially expand the reach of CBT early interventions.

Although RCTs have provided solid evidence in support of using CBT, there is still a need to develop and evaluate additional early intervention strategies. Compared to other early interventions, CBT is resource-intensive, requiring greater logistical coordination, therapist expertise, and investment of time. For these reasons, CBT is not appropriate as an immediate intervention in the initial hours or days after trauma, when survivors may be preoccupied with more urgent, practical concerns. Furthermore, existing RCTs have mostly compared CBT to supportive counseling or wait-list control conditions. It would be informative to broaden the types of comparison groups to include interventions that focus on sleep, diet, or exercise to determine if CBT's benefits exceed those of simply improving self-care (Litz & Bryant, 2009).

As CBT does not seem well suited as an immediate intervention, it is less clear which interventions may be effective in the immediate aftermath of a potentially traumatic event. As discussed in this chapter, psychological debriefing, psychological first aid, and psychoeducation have been used as selective interventions targeting individuals exposed to trauma, with varying degrees of success. Since RCTs have failed to support the efficacy of CISD, it is no longer recommended by the International Society for Traumatic Stress Studies (ISTSS) and National Institute of Mental Health (NIMH; Bisson et al., 2009; NIMH, 2008). While there is some evidence that other types of PD such as Battlemind Debriefing may be more effective, further evaluation is needed. Institutions such as the ISTSS now recommend PFA as a nonintrusive, flexible approach to alleviating distress and promoting long-term adaptive functioning. PFA is particularly suited to disasters and mass trauma, when a large number of survivors may be grief-stricken and too beleaguered with addressing basic needs to benefit from other interventions. Importantly, early interventions such as CBT and PFA are not mutually exclusive and may complement one another. It is essential that future studies evaluate PFA empirically to further inform the trauma field of its merits as a preventive intervention. Psychoeducation as a stand-alone

intervention constitutes another form of selective prevention that is widely used and assumed to be beneficial, or at worst innocuous, but requires empirical validation. Although preliminary research on psychoeducation has been discouraging (Scholes et al., 2007; Turpin et al., 2005), further investigations are needed to make firm conclusions about its efficacy.

Currently, most early interventions such as PFA and CBT depend on direct contact with mental health providers. Since trauma survivors may encounter financial, personal, or logistical barriers that prevent them from accessing these services (Kessler, 2000), there is great interest in using innovative methods for delivering early interventions, including the Internet (Benight, Ruzek, & Waldrep, 2008), telephone (Phipps, Byrne, & Deane, 2007), and self-help (Bugg, Turpin, Mason, & Scholes, 2009). These different forms of delivery have been highlighted as simple, inexpensive, and easily accessible. These tools have the potential to reach more people in need of services because they place less demand on professional resources and provide instant communication, unlimited by geographic barriers (Benight et al., 2008; Phipps et al., 2007). Internet-based interventions have been used to treat PTSD (Lange et al., 2003; Litz, Engel, Bryant, & Papa, 2007), but further research is needed to determine how Internet-based interventions could be employed within the prevention framework. Interventions delivered via telephone are also promising, as a phone-based CBT intervention has been shown to reduce anxiety in Israeli citizens following the threat of a terrorist attack (Somer, Tamir, Maguen, & Litz, 2005). Additionally, in a study directly aimed at preventing PTSD in MVA survivors, participants who received a phone-based intervention were less likely to meet criteria for PTSD and reported fewer PTSD symptoms than controls at three- to four-month follow-up (Gidron et al., 2001). Preventive interventions can also be delivered through self-help methods, from detailed booklets with CBT techniques to writing paradigms, although early findings have not supported the efficacy of these techniques (Bugg et al., 2009; Ehlers et al., 2003). Well-controlled studies are needed to compare the efficacy of preventive interventions delivered via conventional, direct contact with clinicians versus those delivered through Internet, telephone, or self-help methods. In addition, concerns over unique ethical considerations and guidelines when using these different forms of delivery (e.g., patient confidentiality, consent, liability issues, appropriateness for psychiatric emergencies) must be seriously considered (Hsiung, 2002).

Early intervention research may also benefit from adapting other treatments that have proven effective for treating chronic PTSD. For example, Eye Movement Desensitization and Reprocessing (EMDR) is efficacious for treating PTSD (reviewed in Ponniah & Hollon, 2009), although it may be less practical to implement than CBT. Cognitive Processing Therapy (CPT) could be a helpful preventive intervention for sexual assault survivors, since research has found it to be effective for treating chronic PTSD in this population (Chard, 2005; Resick, Nishith, Weaver, Astin, & Feuer, 2002;). Other treatments, such as hypnotherapy, may serve as useful adjuncts to CBT (Ponniah & Hollon, 2009). Thus far, early intervention research has not found that hypnotic induction preceding exposure confers additional long-term benefits over CBT alone (Bryant et al., 2005, 2006), but interest remains in exploring different ways that hypnosis could enhance outcomes.

Although the field of PTSD prevention has focused mainly on psychological interventions, there is also growing interest in pharmacological strategies. It is well established that stressful and traumatic events trigger a cascade of acute physiological changes that constitute the "flight-or-fight" response. Dysregulation of the acute stress response may contribute to the onset and maintenance of enduring difficulties including PTSD (Yehuda & Golier, 2009). Hydrocortisone, propranolol, benzodiazepines, and morphine have all been used in attempts to regulate the stress response and prevent overconsolidation of trauma-related memories (Bryant, Creamer, O'Donnell, Silove, & McFarlane, 2009; Feldner, Monson, & Friedman, 2007). There is some evidence that administering propranolol to patients with elevated physiological arousal decreases PTSD symptoms (Pitman et al., 2002; Vaiva et al., 2003). However, other studies have found no significant differences in PTSD for either propranolol or benzodiazepines compared to placebo (Gelpin, Bonne, Peri, Brandes, & Shalev, 1996; Mellman, Bustamante, David, & Fins, 2002; Stein, Kerridge, Dimsdale, & Hoyt, 2007). Acute administration of morphine shortly after traumatic injury has been associated with lower rates of PTSD (Holbrook, Galarneau, Dye, Quinn, & Dougherty, 2010) and decreases in PTSD severity (Bryant et al., 2009), but these studies did not use a randomized placebo-controlled design, limiting the ability to draw firm conclusions about morphine's use as an early intervention.

Although some studies have found preliminary evidence for using pharmacotherapy to reduce PTSD symptoms (Bryant et al., 2009; Pitman et al., 2002; Vaiva et al., 2003), rigorous RCTs are needed before

conclusions can be made about the efficacy of pharmacotherapy for preventing PTSD. Medications offer potential as a preventive intervention since they are easily administered (i.e., they do not require a professional trained in trauma treatment) and consist of a simple regimen for the patient. However, several issues should be considered in assessing medications' utility as an early intervention. For example, potential benefits would need to be weighed against possible side effects of the medication. Other important considerations include determining dosage, establishing screening criteria and procedures, and training medical personnel or mental healthcare workers. Additionally, administering medications as prophylaxis may only be possible in medical facilities, which would limit this early intervention to those who present to a hospital setting shortly after traumatic exposure.

In addition to further evaluating the form and content of preventive interventions, future research should also explore other areas such as how to measure and target additional outcomes of interest (rather than traditional PTSD variables), how to identify those most in need, and how soon to initiate these interventions. In determining the efficacy of preventive interventions, there is growing interest in assessing not only maladaptive functioning but also other outcomes that reflect how well individuals are actually functioning in their daily lives, relationships, and occupational roles. Measuring outcomes that reflect long-term adaptive adjustment, such as increased help-seeking or social support, could also provide valuable information on the efficacy of these interventions. To this end, it is essential to create brief, reliable, and well-validated instruments that can be used in the aftermath of trauma for assessing these outcomes.

Comorbidity is another important issue related to early intervention of PTSD. Epidemiological findings indicate that 88% of men and 79% of women with PTSD meet criteria for at least one other disorder in their lifetime (Kessler et al., 1995). PTSD is especially likely to co-occur with other anxiety disorders, depression, and substance use disorders. Despite these high rates of comorbidity, early intervention research has yet to address how patients presenting with specific patterns of comorbidity differ from patients who are only experiencing symptoms of PTSD. There is some evidence that early interventions incorporating collaborative case management, pharmacological treatment, and separate psychological interventions targeting PTSD and substance abuse are feasible and effective, but more research is needed in this area (Zatzick et al., 2001, 2004).

Another remaining challenge lies in identifying individuals who are most vulnerable to lasting posttraumatic impairment and are therefore most in need of early intervention. Since resources are often limited, it is essential to allocate these resources wisely by accurately identifying those who are most likely to develop serious posttraumatic difficulties. Administering early interventions to all trauma-exposed individuals would not only be impractical and wasteful of scarce resources but could also interfere with natural resiliency and recovery processes (McNally et al., 2003). However, identifying those who would benefit from early intervention is complicated by the difficulty of predicting later dysfunction from initial symptoms. That is, individuals who exhibit immediate, acute distress or impaired functioning often recover fully, while others who initially give little indication of dysfunction may experience delayed-onset PTSD (Andrews et al., 2007; Bonanno, 2004).

To aid in identifying those in need of clinical care, effective screening tools are needed for distinguishing normal, transient dysfunction from symptoms that indicate severe distress that is likely to persist. A variety of potential risk factors that may be germane to chronic posttraumatic difficulties have been studied (reviewed in Brewin, Andrews, & Valentine, 2000; McNally et al., 2003). Cross-sectional studies have found significant associations between PTSD and factors that existed prior to trauma exposure (e.g., personality traits, family psychiatric history, childhood abuse, cognitive ability), characteristics of the trauma itself (e.g., type of trauma, duration of traumatic exposure, trauma severity), and peri- and posttrauma variables (e.g., ASD, dissociation, hyper-arousal, lack of social support) (Brewin et al., 2000). To date, only a few posttrauma variables, such as number of posttraumatic stress symptoms and ASD diagnosis, have been used as screening criteria for indicated early interventions (e.g., Bryant et al., 1998). Prospective and longitudinal risk and resiliency research could play an important role in further examining these factors as well as identifying other potential screening variables (Litz, 2008).

It also remains unclear how soon interventions should be implemented after a traumatic event (Litz, 2008). Because victims of trauma often increase their contact with health services in the hours, days, and weeks following a traumatic event, there is more opportunity to intervene during this time, rather than waiting months after traumatic exposure when problems have become entrenched. However, although it is often assumed that sooner is better, survivors may have more pressing, practical concerns immediately after a traumatic event that

would be unethical to neglect. They may also be too acutely distressed to process and benefit from new information (Litz & Bryant, 2009). Existing early interventions range from days (Bryant et al., 1999) to months (Ehlers et al., 2003) after trauma exposure. There is some evidence that participants receiving CBT within the first month after traumatic exposure experience better outcomes, compared to those who receive CBT one to three months after the traumatic event (Sijbrandij et al., 2007). Future RCTs should devote more attention to determining the best time to intervene after traumatic exposure. Such research would undoubtedly increase our ability to effectively and efficiently facilitate recovery and prevent long-term suffering in trauma survivors.

References

Adler, A. B., Castro, C. A., & McGurk, D. (2009). Time-driven Battlemind psychological debriefing: A group-level early intervention in combat. *Military Medicine, 174*, 21–28.

Adler, A. B., Litz, B. T., Castro, C. A., Suvak, M., Thomas, J. L., Burrell, L., et al. (2008). A group randomized trial of critical incident stress debriefing provided to U.S. peacekeepers. *Journal of Traumatic Stress, 21,* 253–263.

Andrews, B., Brewin, C. R., Philpott, R., & Stewart, L. (2007). Delayed-onset posttraumatic stress disorder: A systematic review of the evidence. *American Journal of Psychiatry, 164*, 1319–1326.

Beck, A.T., Rush, A.J., Shaw, B.F., & Emery, G. (1979). *Cognitive therapy of depression*. New York: Guilford.

Benight, C. C., Ruzek, J. I., & Waldrep, E. (2008). Internet interventions for traumatic stress: A review and theoretically based example. *Journal of Traumatic Stress, 21*, 513–520.

Bisson, J. I., McFarlane, A. C., Rose, S., Ruzek, J. I., & Watson, P. J. (2009). Psychological debriefing for adults. In E. B. Foa, T. M. Keane, M. J. Friedman, & J. A. Cohen (Eds.), *Effective treatments for PTSD: Practice guidelines from the International Society for Traumatic Stress Studies* (2nd ed., pp. 83–105). New York: Guilford.

Bisson, J. I., Shepherd, J. P., Joy, D., Probert, R., & Newcombe, R. G. (2004). Early cognitive-behavioural therapy for post-traumatic stress symptoms after physical injury: Randomised controlled trial. *British Journal of Psychiatry, 184*, 63–69.

Bisson, J., Jenkins, P., Alexander, J., & Bannister, C. (1997). A randomized controlled trial of psychological debriefing for victims of acute burn trauma. *British Journal of Psychiatry, 171,* 78–81.

Bonanno, G. A. (2004). Loss, trauma, and human resilience: Have we underestimated the human capacity to thrive after extremely aversive events? *American Psychologist, 59*, 20–28.

Breslau, N., Kessler, R. C., Chilcoat, H. D., Schultz, L. R., Davis, G. C., & Andreski, P. (1998). Trauma and posttraumatic stress disorder in the community: The 1996 Detroit Area Survey of Trauma. *Archives of General Psychiatry, 55*, 626–632.

Brewin, C. R., Andrews, B., & Valentine, J. D. (2000). Meta-analysis of risk factors for posttraumatic stress disorder in trauma-exposed adults. *Journal of Consulting and Clinical Psychology, 68,* 748–766.

Bryant, R. A., Creamer, M., O'Donnell, M., Silove, D., & McFarlane, A. C. (2009). A study of the protective function of acute morphine administration on subsequent posttraumatic stress disorder. *Biological Psychiatry, 65*, 438–440.

Bryant, R. A., Harvey, A. G., Dang, S. T., Sackville, T., & Basten, C. (1998). Treatment of acute stress disorder: A comparison of cognitive-behavioral therapy and supportive counseling. *Journal of Consulting and Clinical Psychology, 66*, 862–866.

Bryant, R. A., Mastrodomenico, J., Felmingham, K. L., Hopwood, S., Kenny, L., Kandris, E., et al. (2008). Treatment of acute stress disorder: A randomized controlled trial. *Archives of General Psychiatry, 65,* 659–667.

Bryant, R., Moulds, M., & Nixon, R. (2003). Cognitive behavior therapy of acute stress disorder: A four-year follow-up. *Behaviour Research and Therapy, 41,* 489–494.

Bryant, R.A., Moulds, M.L., Guthrie, R.M., & Nixon, R.D. (2005). The additive benefit of hypnosis and cognitive-behavioral therapy in treating acute stress disorder. *Journal of Consulting and Clinical Psychology, 73*, 334-40.

Bryant, R. A., Moulds, M. L., Nixon, R. D., Mastrodomenico, J., Felmingham, K., & Hopwood, S. (2006). Hypnotherapy and cognitive behavior therapy of acute stress disorder: A 3-year follow-up. *Behavioral and Research Therapy, 44*, 1331–1335.

Bryant, R. A., Sackville, T., Dang, S. T., Moulds, M., & Guthrie, R. (1999). Treating acute stress disorder: An evaluation of cognitive behavior therapy and supportive counseling techniques. *American Journal of Psychiatry, 156*, 1780–1786.

Brymer, M., Jacobs, A., Layne, C., Pynoos, R., Ruzek, J., Steinberg, A., et al. (2006). *Psychological first aid field operations guide*. Washington, DC: National Child Traumatic Stress Network and National Center for PTSD.

Bugg, A., Turpin, G., Mason, S., & Scholes, C. (2009). A randomised controlled trial of the effectiveness of writing as a self-help intervention for traumatic injury patients at risk of developing post-traumatic stress disorder. *Behaviour Research and Therapy, 47*, 6–12.

Chard, K. M. (2005). An evaluation of cognitive processing therapy for the treatment of posttraumatic stress disorder related to childhood sexual abuse. *Journal of Consulting and Clinical Psychology, 73*, 965–971.

Conlon, L., Fahy, T. J., & Conroy, R. (1999). PTSD in ambulant RTA victims: A randomized controlled trial of debriefing. *Journal of Psychosomatic Research, 46*, 37–44.

Creamer, M., & O'Donnell, M. (2008). The pros and cons of psychoeducation following-trauma: Too early to judge? *Psychiatry: Interpersonal and Biological Processes, 71*, 319–321.

Deahl, M., Srinivasan, M., Jones, N., Thomas, J., Neblett, C., & Jolly, A. (2000). Preventing psychological trauma in soldiers: The role of operational stress training and psychological debriefing. *British Journal of Medical Psychology, 73*, 77–85.

Devilly, G. J., Gist, R., & Cotton, P. (2006). Ready! Fire! Aim! The status of psychological debriefing and therapeutic interventions: In the work place and after disasters. *Review of General Psychology, 10*, 318–345.

Echeburua, E., de Corral, P., Sarasua, B., & Zubizarreta, I. (1996). Treatment of acute posttraumatic stress disorder in rape victims An experimental study. *Journal of Anxiety Disorders, 10*, 185–199.

Ehlers, A., & Clark, D. M. (2003). Early psychological interventions for adult survivors of trauma: A review. *Biological Psychiatry, 53*, 817–826.

Ehlers, A., Clark, D. M., Hackmann, A., McManus, F., Fennell, M., Herbert, C., et al. (2003). A randomized controlled trial of cognitive therapy, a self-help booklet, and repeated assessments as early interventions for posttraumatic stress disorder. *Archives of General Psychiatry, 60*, 1024–1032.

Everly, G. S., Flannery, R. B., & Eyler, V. A. (2002). Critical incident stress managment (CISM): A statistical review of the literature. *Psychiatric Quarterly, 73*, 171–182.

Everly, G. S., Flannery, R. B., & Mitchell, J. T. (2000). Critical incident stress management (CISM): A review of the literature. *Aggression and Violent Behavior, 5,* 23–40.

Feldner, M. T., Monson, C. M., & Friedman, M. J. (2007). A critical analysis of approaches to targeted PTSD prevention: Current status and theoretically derived future directions. *Behavior Modification, 31*, 80–116.

Foa, E. B., Dancu, C. V., Hembree, E. A., Jaycox, L. H., Meadows, E. A., & Street, G. P. (1999). A comparison of exposure therapy, stress inoculation training, and their combination for reducing posttraumatic stress disorder in female assault victims. *Journal of Consulting and Clinical Psychology, 67*, 194–200.

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

Foa, E. B., & Meadows, E. A. (1997). Psychosocial treatments for post-traumatic stress disorder: A critical review. In J. Spence, J. M. Darley, & D. J. Foss (Eds.), *Annual review of psychology* (pp. 449–480). Palo Alto, CA: Annual Reviews.

Foa, E. B., Rothbaum, B. O., Riggs, D., & Murdock, T. (1991). Treatment of post-traumatic stress disorder in rape victims: a comparison between cognitive-behavioral procedures and counseling. *Journal of Consulting and Clinical Psychology, 59*, 715–723.

Foa, E. B., Zoellner, L. A., & Feeny, N. C. (2006). An evaluation of three brief programs for facilitating recovery after assault. *Journal of Traumatic Stress, 19*, 29–43.

Gelpin, E., Bonne, O., Peri, T., Brandes, D., & Shalev, A. Y. (1996). Treatment of recent trauma survivors with benzodiazepines: A prospective study. *Journal of Clinical Psychiatry, 57*, 390–394.

Geren, P., & Casey, G. W., Jr. (2009, May 7). Army posture statement: Comprehensive soldier fitness program. In *Online information papers* (Addenda A). Retrieved June 28, 2010, from http://www.army.mil/aps/09/information_papers/comprehensive_soldier_fitness_program.html.

Gidron, Y., Gal, R., Freedman, S., Twiser, I., Lauden, A., Snir, Y., et al. (2001). Translating research findings to PTSD prevention: Results of a randomized-controlled pilot study. *Journal of Traumatic Stress, 14,* 773–780.

Gray, M. J., & Litz, B. T. (2005). Behavioral interventions for recent trauma: Empirically informed practice guidelines. *Behavior Modification, 29,* 189–215.

Harvey, A. G., & Bryant, R. A. (1998). The relationship between acute stress disorder and posttraumatic stress disorder: a prospective evaluation of motor vehicle accident survivors. *Journal of Consulting and Clinical Psychology, 66*, 507–512.

Hobbs, M., Mayou, R., Harrison, B., & Worlock, P. (1996). A randomized controlled trial of psychological debriefing for victims of road traffic accidents. *British Medical Journal, 313*, 1438–1439.

Hobfoll, S. E., Walter, K. H., & Horsey, K. J. (2008). Dose and fit are vital to intervention success. *Psychiatry: Interpersonal and Biological Processes, 71*, 308–318.

Hobfoll, S. E., Watson, P., Bell, C. C., Bryant, R. A., Brymer, M. J., Friedman, M. J., et al. (2007). Five essential elements of immediate and mid-term mass trauma intervention: Empirical evidence. *Psychiatry, 70*, 283–315.

Holbrook, T. L., Galarneau, M. R., Dye, J. L., Quinn, K., & Dougherty, A. L. (2010). Morphine use after combat injury in Iraq and post-traumatic stress disorder. *New England Journal of Medicine, 362*, 110–117.

Hsiung, R. C. (2002). Suggested principles of professional ethics for e-therapy. In R. C. Hsiung (Ed.), *E-therapy: Case studies, guiding principles, and the clinical potential of the Internet* (pp. 150–165). New York: W. W. Norton.

Jacobson, N. S., Dobson, K. S., Truax, P. A., Addis, M. E., Koerner, K., Gollan, J. K., et al. (1996). A component analysis of cognitive-behavioral treatment for depression. *Journal of Consulting and Clinical Psychology, 64*, 295–304.

Jakupcak, M., Roberts, L. J., Martell, C., Mulick, P., Michael, S., Reed, R., et al. (2006). A pilot study of behavioral activation for veterans with posttraumatic stress disorder. *Journal of Traumatic Stress, 19*, 387–391.

Kanter, J. W., Manos, R. C., Bowe, W. M., Baruch, D. E., Busch, A. M., & Rusch, L. C. (2010). What is behavioral activation? A review of the empirical literature. *Clinical Psychology Review, 30*, 608–620.

Keane, T. M., Fairbank, J. A., Caddell, J., Zimering, R. T., & Bender, M. (1985). A behavioral approach to assessing and treating post-traumatic stress disorder in Vietnam veterans. In C. R. Figley (Ed.), *Trauma and its wake: The study and treatment of post-traumatic stress disorder* (pp. 257–294). New York: Brunner/Mazel.

Kessler, R. C. (2000). Posttraumatic stress disorder: The burden to the individual and to society. *Journal of Clinical Psychiatry, 61*(Suppl. 5), 4–14.

Kessler, R. C., Sonnega, A., Bromet, E., Hughes, M., & Nelson, C. B. (1995). Posttraumatic Stress Disorder in the National Comorbidity Survey. *Archives of General Psychiatry, 52*, 1048–1060.

Kilpatrick, D. G., Cougle, J. R., & Resnick, H. S. (2008). Reports of the death of psychoeducation as a preventative treatment for posttraumatic psychological distress are exaggerated. *Psychiatry: Interpersonal and Biological Processes, 71*, 322–328.

Lange, A., Rietdijk, D., Hudcovicova, M., van de Ven, J.-P., Schrieken, B., & Emmelkamp, P. M. G. (2003). Interapy: A controlled randomized trial of the standardized treatment of posttraumatic stress through the Internet. *Journal of Consulting and Clinical Psychology, 71*, 901–909.

Litz, B. T. (2008). Early intervention for trauma: Where are we and where do we need to go? A commentary. *Journal of Traumatic Stress, 21*, 503–506.

Litz, B. T., & Bryant, R. A. (2009). Early cognitive-behavioral interventions for adults. In E. B. Foa, T. M. Keane, M. J. Friedman, & J. A. Cohen (Eds.), *Effective treatments for PTSD: Practice guidelines from the International Society for Traumatic Stress Studies* (2nd ed., pp. 117–135). New York: Guilford.

Litz, B. T., Engel, C. C., Bryant, R. A., & Papa, A. (2007). A randomized, controlled proof-of-concept trial of an Internet-based, therapist-assisted self-management treatment for posttraumatic stress disorder. *American Journal of Psychiatry, 16*4, 1676–1684.

Litz, B. T., & Gray, M. J. (2004). Early intervention for trauma in adults: A framework for first aid and secondary prevention. In B. T. Litz (Ed.), *Early intervention for trauma and traumatic loss* (pp. 87–111). New York: Guilford.

Litz, B. T., Gray, M. J., Bryant, R. A., & Adler, A. B. (2002). Early intervention for trauma: Current status and future directions. *Clinical Psychology: Science and Practice, 9*, 112–134.

Mayou, R. A., Ehlers, A., & Hobbs, M. (2000). Psychological debriefing for road traffic accident victims: Three-year follow-up of a randomised controlled trial. *British Journal of Psychiatry, 176*, 589–593.

McCann, L., & Pearlman, L. A. (1990). Constructivist self-development theory as a framework for assessing and treating victims of family violence. In S. M. Stith, M. B. Williams, & K. H. Rosen (Eds.), *Violence hits home: Comprehensive treatment approaches to domestic violence* (pp. 305–329). New York: Springer.

McNally, R. J., Bryant, R. A., & Ehlers, A. (2003). Does early psychological intervention promote recovery from posttraumatic stress? *Psychological Science in the Public Interest, 4*, 45–79.

Mellman, T. A., Bustamante, V., David, D., & Fins, A. I. (2002). Hypnotic medication in the aftermath of trauma. *Journal of Clinical Psychiatry, 63*, 1183–1184.

Mitchell, J.T. (2003, February 1). *Crisis intervention and CISM: A research summary*. Retrieved July 7,

2010, from http://www.icisf.org/articles/cism_research_summary.pdf

Mitchell, J. T. (2004). A response to the Devilly and Cotton article, "Psychological Debriefing and the Workplace . . ." *Australian Psychologist, 39,* 24–28.

Mitchell, J. T., & Everly, G. S., Jr. (1996). *Critical incident stress debriefing: An operations manual for the prevention of traumatic stress among emergency services and disaster workers* (2nd ed.). Ellicott City, MD: Chevron.

Mitchell, J.T., & Everly, G. S., Jr. (2001). *Critical incident stress debriefing: An operations manual for CISD, defusing and other group crisis intervention services* (3rd ed.). Ellicott City, MD: Chevron.

Mrazek, P. B., & Haggerty, R. J. (Eds.). (1994). *Reducing risks for mental disorders: Frontiers for preventive intervention research*. Washington, DC: National Academy Press.

Mulick, P. S., & Naugle, A. E. (2004). Behavioral activation for comorbid PTSD and major depression: A case study. *Cognitive and Behavioral Practice, 11*, 378–387.

Muñoz, R. F., Mrazek, P. J., & Haggerty, R. J. (1996). Institute of Medicine report on prevention of mental disorders: Summary and commentary. *American Psychologist, 51*, 1116–1122.

National Institute for Health and Clinical Excellence. (2005, June). *Brief debriefing – doesn't help, might harm. In Gems from Cochrane: Mental Health.* Retrieved July 7, 2010, from http://www.cks.nhs.uk/knowledgeplus/gems_from_cochrane/previous_gems_by_clinical_category/mental_health/brief_debriefing_doesnt_help_might_harm#

National Institute of Mental Health. (2008). *Post-traumatic stress disorder (PTSD)* (No. 08 6388). Retrieved July 7, 2010, from http://www.nimh.nih.gov/health/publications/post-traumatic-stress-disorder-ptsd/nimh_ptsd_booklet.pdf.

Ozer, E. J., Best, S. R., Lipsey, T. L., & Weiss, D. S. (2003). Predictors of posttraumatic stress disorder and symptoms in adults: A meta-analysis. *Psychological Bulletin, 129*, 52–73.

Phipps, A. B., Byrne, M. K., & Deane, F. P. (2007). Can volunteer counsellors help prevent psychological trauma? A preliminary communication on volunteers skill using the 'orienting approach' to trauma counselling. *Stress and Health, 23*, 15–21.

Pitman, R. K., Sanders, K. M., Zusman, R. M., Healy, A. R., Cheema, F., Lasko, N. B., et al. (2002). Pilot study of secondary prevention of posttraumatic stress disorder with propranolol. *Biological Psychiatry, 51*, 189–192.

Ponniah, K., & Hollon, S. D. (2009). Empirically supported psychological treatments for adult acute stress disorder and posttraumatic stress disorder: A review. *Depression and Anxiety, 26*, 1086–1109.

Pratt, S. I., Rosenberg, S., Mueser, K. T., Brancato, J., Salyers, M., Jankowski, M. K., et al. (2005). Evaluation of a PTSD psychoeducational program for psychiatric inpatients. *Journal of Mental Health, 14*, 121–127.

Resick, P. A., Nishith, P., Weaver, T. L., Astin, M. C., & Feuer, C. A. (2002). A comparison of cognitive-processing therapy with prolonged exposure and a waiting condition for the treatment of chronic posttraumatic stress disorder in female rape victims. *Journal of Consulting and Clinical Psychology, 70*, 867–879.

Resnick, H., Acierno, R., Kilpatrick, D. G., & Holmes, M. (2005). Description of an early intervention to prevent substance abuse and psychopathology in recent rape victims. *Behavior Modification, 29,* 156–188.

Resnick, H., Acierno, R., Waldrop, A. E., King, L., King, D., Danielson, C., et al. (2007). Randomized controlled evaluation of an early intervention to prevent post-rape psychopathology. *Behaviour Research and Therapy, 45*, 2432–2447.

Roberts, N. P., Kitchiner, N. J., Kenardy, J., & Bisson, J. I. (2009). Systematic review and meta-analysis of multiple-session early interventions following traumatic events. American *Journal of Psychiatry, 166*, 293–301.

Rose, S., Bisson, J., Churchill, R., & Wessely, S. (2002). Psychological debriefing for preventing post traumatic stress disorder (PTSD). *Cochrane Database of Systematic Reviews* (2), CD000560.

Rose, S., Brewin, C. R., Andrews, B., & Kirk, M. (1999). A randomized controlled trial of individual psychological debriefing for victims of violent crime. *Psychological Medicine, 29*, 793–799.

Rosen, C. S., Chow, H. C., Finney, J. F., Greenbaum, M. A., Moos, R. H., Sheikh, J. I., et al. (2004). VA practice patterns and practice guidelines for treating posttraumatic stress disorder. *Journal of Traumatic Stress, 17*, 213–222.

Ruzek, J. I. (2008). Commentary on "Does Psychoeducation Help Prevent Posttraumatic Psychological Distress?" *Psychiatry: Interpersonal and Biological Processes, 71*, 332–338.

Ruzek, J. I., Brymer, M. J., Jacobs, A. K., Layne, C. M., Vernberg, E. M., & Watson, P. J. (2007).

Psychological first aid. *Journal of Mental Health Counseling, 29,* 17–49.

Scholes, C., Turpin, G., & Mason, S. (2007). A randomised controlled trial to assess the effectiveness of providing self-help information to people with symptoms of acute stress disorder following a traumatic injury. *Behaviour Research and Therapy, 45*, 2527–2536.

Sijbrandij, M., Olff, M., Reitsma, J. B., Carlier, I. V. E., de Vries, M. H., & Gersons, B. P. R. (2007). Treatment of acute posttraumatic stress disorder with brief cognitive behavioral therapy: A randomized controlled trial. *American Journal of Psychiatry, 164*, 82–90.

Sijbrandij, M., Olff, M., Reitsma, J. B., Carlier, I. V., & Gersons, B. P. (2006). Emotional or educational debriefing after psychological trauma. Randomised controlled trial. British *Journal of Psychiatry, 189*, 150–155.

Somer, E., Tamir, E., Maguen, S., & Litz, B. T. (2005). Brief cognitive-behavioral phone-based intervention targeting anxiety about the threat of attack: A pilot study. *Behaviour Research and Therapy, 43*, 669–679.

Stein, M. B., Kerridge, C., Dimsdale, J. E., & Hoyt, D. B. (2007). Pharmacotherapy to prevent PTSD: Results from a randomized controlled proof-of-concept trial in physically injured patients. *Journal of Traumatic Stress, 20*, 923–932.

Turpin, G., Downs, M., & Mason, S. (2005). Effectiveness of providing self-help information following acute traumatic injury: Randomised controlled trial. *British Journal of Psychiatry, 187*, 76–82.

Vaiva, G., Ducrocq, F., Jezequel, K., Averland, B., Lestavel, P., Brunet, A., et al. (2003). Immediate treatment with propranolol decreases posttraumatic stress disorder two months after trauma. *Biological Psychiatry, 54*, 947–949.

van Emmerik, A. A. P., Kamphuis, J. H., Hulsbosch, A. M., & Emmelkamp, P. M. G. (2002). Single session debriefing after psychological trauma: A meta-analysis. *Lancet, 360*, 766–771.

van Emmerik, A.A.P., Kamphuis, J.H., & Emmelkamp, P.M.G. (2008). Treating acute stress disorder and posttraumatic stress disorder with cognitive behavioral therapy or structured writing therapy: A randomized controlled trial. *Psychotherapy and Psychosomatics, 77*, 93-100.

Vernberg, E. M., Steinberg, A. M., Jacobs, A. K., Brymer, M. J., Watson, P. J., Osofsky, J. D., et al. (2008). Innovations in disaster mental health: Psychological first aid. *Professional Psychology: Research and Practice, 39*, 381–388.

Wagner, A. W., Zatzick, D. F., Ghesquiere, A., & Jurkovich, G. J. (2007). Behavioral activation as an early intervention for posttraumatic stress disorder and depression among physically injured trauma survivors. *Cognitive and Behavioral Practice, 14*, 341–349.

Wessely, S., Bryant, R. A., Greenberg, N., Earnshaw, M., Sharpley, J., & Hughes, J. H. (2008). Does psychoeducation help prevent post traumatic psychological distress? *Psychiatry: Interpersonal and Biological Processes, 71*, 287–302.

Yehuda, R., & Golier, J. (2009). Is there a rationale for cortisol-based treatments for PTSD? *Expert Review of Neurotherapeutics, 9*, 1113–1115.

Zatzick, D. F., Roy-Byrne, P., Russo, J. E., Rivara, F. P., Koike, A., Jurkovich, G. J., et al. (2001). Collaborative interventions for physically injured trauma survivors: A pilot randomized effectiveness trial. *General Hospital Psychiatry, 23*, 114–123.

Zatzick, D., Roy-Byrne, P., Russo, J., Rivara, F., Droesch, R., Wagner, A., et al. (2004). A randomized effectiveness trial of stepped collaborative care for acutely injured trauma survivors. *Archives of General Psychiatry, 61,* 498–506.