

MODULE I: TREATMENT INTERVENTIONS**Module I-1. EARLY INTERVENTION TO PREVENT PTSD 102**

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Module I-1. EARLY INTERVENTION TO PREVENT PTSD**BACKGROUND**

Several studies have examined the effectiveness of treatment interventions and acute symptom management early (within 1 month) following a traumatic event in preventing PTSD. This includes the use of various medications for the prevention of PTSD and brief multiple sessions of psychotherapy.

This section summarizes the evidence supporting the recommendations for early intervention discussed in Module A, Annotation J: Brief Intervention. Table I-1 summarizes the recommendations for interventions, and their potential benefit and harm.

Table I - 1 Early Intervention after Exposure to Trauma (4 to 30 days after exposure)

SR	Balance of Benefit and Harm			
	Significant Benefit	Some Benefit	Unknown Benefit	No Benefit
A	- Brief Cognitive Behavioral Therapy (4-5 sessions)			
B				
C		- Social support		
D				- Individual psychological debriefing ☹ - Formal psychotherapy for asymptomatic survivors ☹ - Benzodiazepines ☹ - Typical Antipsychotics ☹
I		- Psychoeducation and normalization	- Imipramine - Propranolol - Prazosin - Other Antidepressants - Anticonvulsants - Atypical Antipsychotics - Spiritual support - Psychological First Aid	- Group psychological debriefing

☹ = Potential harm; SR = Strength of recommendation (see Introduction)

RECOMMENDATIONS

The following treatment recommendations should apply for all acutely traumatized people who meet the criteria for diagnosis of ASD, and for those with significant levels of acute stress symptoms that last for more than two weeks post-trauma, as well as those who are incapacitated by acute psychological or physical symptoms.

1. Continue providing psychoeducation and normalization.
2. Treatment should be initiated after education, normalization, and Psychological First Aid has been provided and after basic needs following the trauma have been made available.
3. There is insufficient evidence to recommend for or against the use of Psychological First Aid to address symptoms beyond 4 days following trauma. [I]
4. Survivors who present with symptoms that do not meet the diagnostic threshold of ASD or PTSD should be monitored and may benefit from follow-up and provision of ongoing counseling or symptomatic treatment.
5. Recommend monitoring for development of PTSD using validated symptom measures (e.g., PTSD Checklist, other screening tools for ASD/PTSD).
6. **Psychotherapy:**
 - a. Consider early brief intervention (4 to 5 sessions) of cognitive-based therapy (CBT) that includes exposure-based therapy, alone or combined with a component of cognitive re-structuring therapy for patients with significant early symptom levels, especially those meeting diagnostic criteria for ASD. [A]
 - b. Routine formal psychotherapy intervention for *asymptomatic* individuals is not beneficial and may be harmful. [D]
 - c. Strongly recommend **against** individual Psychological Debriefing as a viable means of reducing acute stress disorder (ASD) or progression to post-traumatic stress disorder (PTSD). [D]
 - d. The evidence does not support a single session group Psychological Debriefing as a viable means of reducing acute stress disorder (ASD) or progression to post-traumatic stress disorder, but there is no evidence of harm (Note: this is not a recommendation pertaining to Operational Debriefing). [D]
 - e. Groups may be effective vehicles for providing trauma-related education, training in coping skills, and increasing social support, especially in the context of multiple group sessions. [I]
 - f. Group participation should be voluntary.
7. **Pharmacotherapy:**
 - a. There is no evidence to support a recommendation for use of a pharmacological agent to prevent the development of ASD or PTSD. [I]
 - b. Strongly recommend **against** the use of benzodiazepines to prevent the development of ASD or PTSD [D]

For discussion of use of medication for specific symptom management during the early phase after trauma, see [Module I-3: Symptom Management](#)

DISCUSSION

A. PSYCHOTHERAPY**A1. Psychological Debriefing**

Psychological debriefing grew out of practices and experiences involving the military of the United States and other Western nations. For soldiers exhibiting signs of acute stress reaction (ASR) following combat-related traumatic events, the practice of conducting early debriefings as part of a larger restoration approach appeared to have significant impact on reducing more permanent disability.

The use of debriefings soon after exposure to traumatic events became part of military doctrine in the United States and elsewhere, as well as part of standards for early response to catastrophes for organizations, such as the Red Cross. Unfortunately, there are very limited randomized control trial data involving professional work groups (e.g. military units, first responders) trained to respond to traumatic events, for which debriefing procedures were originally intended; these procedures appear to be of little help, and are potentially harmful if used for individual victims of trauma as prophylaxis for PTSD.

In considering the use of debriefing procedures as part of early interventions following trauma exposure, a distinction between the general approaches of psychological versus operational debriefings is in order, as well as debriefing of individual victims of traumatic events and professional work groups trained to respond to these events. Moreover, distinction should be made between debriefing procedures that are targeted at all exposed individuals, irrespective of symptom level, and, by contrast, briefer versions of empirically supported brief psychotherapy interventions that are targeted at symptomatic individuals over a few sessions (see Annotation [A2: Brief Early CBT](#)).

DEFINITIONS

Psychological Debriefing is a broad umbrella term used to describe a variety of one-time individual and/or group procedures that involve review of a traumatic event, by survivors or other impacted persons, for the purpose of actively encouraging individuals to: (a) talk about their experiences during the event; (b) recognize and verbalize their thoughts, emotions, and physical reactions during and since the event; and (c) learn about coping methods. Specially trained debriefers lead psychological debriefings following several protocols. Protocols generally emphasize normalization of symptoms, group support, and provide some psychoeducation and information about resources.

The term “Psychological Debriefing” does not include purely informational briefings or debriefings used in professional military or other workgroups (e.g., psychological education lectures or stress management briefings, such as Battlemind Training, Battlemind Debriefing, or operational debriefings) discussed below.

Operational Debriefing is a routine individual or team review of the details of an event from a factual perspective for the purpose of: (a) learning what actually happened for the historical record or planning purposes; (b) improving results in similar future situations or missions; and (c) increasing the readiness of those being debriefed for further action. Operational debriefings are conducted by leaders or specialized debriefers according to the organization’s standing operational procedure. They are often referred to as “after action” reviews.

Operational debriefings achieve important objectives of the organization, and there is no reason that they should have any effect on reducing subsequent PTSD or other long-term negative outcomes (nor is there evidence for this). Organizations that use operational debriefings should train their debriefers to avoid causing unintentional psychological harm (such as by encouraging personal disclosure), and to identify individuals who need behavioral health follow-up.

Critical Incident Stress Debriefing (CISD) is a formalized structured review method in a group format of the stressful experience of a disaster that includes psychological debriefing. In fact, CISD was developed to assist first responders, such as fire and police personnel, not the victims/survivors of a disaster or their relatives. CISD was never intended as a substitute for therapy, was designed to be delivered in a group format with professional work groups, and is meant to be incorporated into a larger, multi-component crisis intervention system, labeled Critical Incident Stress Management (CISM).

Critical Incident Stress Management (CISM) incorporates several components, including pre-crisis intervention, disaster or large-scale incident demobilization and informational briefings, "town meetings," staff advisement, defusing, CISD, one-on-one crisis counseling or support, family crisis intervention, organizational consultation, and follow-up and referral mechanisms for assessment and treatment, if necessary.

Battlemind Debriefing is a recently developed intervention, aimed specifically at professional military teams/workgroups (like CISD) and designed to reduce any potential iatrogenic effects of psychological debriefing noted in some studies; specifically, less emphasis is given to personal disclosure and review of index events (there is no requirement for individual disclosure; the focus of the debriefing is more broadly on the transition from the entire deployment, rather than a single critical incident), and more emphasis is given to enhancement of peer support. Battlemind debriefing can be delivered in either small group or large group lecture formats. Although Battlemind debriefing has been designed to be used by military units immediately after critical incidents, it has never been tested in this setting. Two published studies of Battlemind debriefing have focused on the post-deployment timeframe in which the entire deployment and facilitating transition home from deployment has been the focus of the intervention.

Individual Debriefing

Reviews and meta-analyses of studies of psychological debriefing as an early intervention to reduce or prevent PTSD symptoms in individuals have concluded that this technique is ineffective or potentially harmful (Rose et al., 2002). Of note, two well-controlled studies with longer-term follow-up of individual patients have suggested that this intervention may be related to a poorer outcome compared to controls (Bisson, 1997; Mayou et al., 2000 which is a follow-up on Hobbs, 1996). Bisson et al. (2008), in a summary of the evidence in the ISTSS guideline (2009), also found no evidence to support the preventive value of individual debriefing delivered in a single session. Of the 10 studies that compared psychological debriefing with no interventions, 2 were positive, 5 were neutral, and 3 had negative results. A meta-analysis conducted by Van Emmerick et al. (2002) included seven studies and found that psychological debriefing interventions (non-CISD) and no intervention improved symptoms of post-traumatic stress disorder, but psychological debriefing did not improve symptoms. Cuijpers et al. (2005) assessed the results of studies examining the effect of prevention and found that the risk of post-traumatic stress disorder was somewhat increased after debriefing but not significantly.

(RR=1.33), indicating a possible adverse effect. The RCTs to date cover only a limited variety of traumatic stressors, subject populations, and debriefing protocols. Most controlled studies have been of individually administered, one-time individual debriefings of victims of motor vehicle accidents or crimes, such as rape. However, findings have been consistent across trials.

Group Debriefing

The recommendations regarding group debriefing, either of victims of trauma or professional work groups, is based primarily on the lack of effectiveness in studies; there does not appear to be any evidence of harm. In a partially randomized trial, Deahl et al. (2000) found no benefit of debriefing over assessment only in terms of PTSD symptoms; however, the group receiving debriefing evidenced lower alcohol misuse scores. The non-random assignment to groups weakens conclusions of this study (Commanders blind to condition separated approximately 100 soldiers into two groups based on schedules and responsibilities; the groups were then randomly designated 'debriefing' or 'control.' Thus, outcomes are confounded by whatever factors were used for separating soldiers into groups by commanders.) In another study by Campfield and Hills (2001), robbery victims were randomly assigned to immediate (less than 10 hours) or delayed (greater than 48 hours) CISM groups. Immediate CISM produced more pronounced reduction in symptoms, but no control group was employed, and thus no conclusions regarding efficacy relative to no treatment can be made. This is particularly necessary with this intervention, given that most people will recover spontaneously without any intervention and because of the potentially iatrogenic effects found in some studies of CISM with individuals. Other studies of group debriefing that have been conducted were of poor design in terms of low sample size and/or non-random assignment to group and preclude conclusions regarding efficacy (Eid et al., 2001; Richards, 2001). In an analogue study with students, Devilly et al. (2008) found no advantage of debriefing following a distressing video relative to a post-video snack.

Two more RCT's are relevant to the discussion of group debriefing in combat units, although not specifically at the time of the critical incident events. Adler et al. (2008) conducted a randomized trial of Critical Incident Stress Debriefing (CISM) of groups of soldiers deployed to a Kosovo peacekeeping mission. This trial randomised 1,050 soldiers from 19 platoons into 62 groups receiving one of three conditions: Debriefing (23 groups), Stress Education (20 groups) and No Intervention (19 groups), and focused on the entire deployment period. The authors reported no differences between groups on all behavioural outcomes, though the deployment had resulted in relatively few critical events. In a second RCT by Adler et al. (2009) with U.S. soldiers returning from Iraq who had been exposed to direct combat throughout their deployment, results indicated that compared to a Stress Education control condition, the Battlemind Debriefing had no overall effect on PTSD; within the subgroup with highest levels of combat exposure, Battlemind Debriefing was no more effective than the Battlemind Training lecture (given in both small group and large group formats), with both treatments producing small improvements in PTSD Check List (PCL) scores. A small but significant reduction in PTSD symptoms, depression symptoms, and sleep problems was observed in Soldiers with the highest levels of combat exposure for Battlemind Debriefing compared with standard stress education, although similar benefits were observed for the two other Battlemind training classroom interventions. Thus, given the similar efficacy of the Battlemind Training lecture program, and the very small effect sizes observed, there is no reason to recommend Battlemind Debriefing over the Battlemind lecture program.

It remains possible that group interventions with pre-existing work groups (teams, units, EMTs, co-workers) immediately after traumatic events may assist with prevention of PTSD symptoms or with non-PTSD areas of improvement, such as group cohesion, morale, and other important variables, but the empirical evidence for this is insufficient due to poorly designed studies. Similarly, group interventions may be useful for screening, education, and support. Trained personnel should lead these group interventions and if group approaches are used, group participation should be voluntary. Operational debriefings after traumatic events during on-going military operations also share these considerations, but they have other objectives that may override individual mental health protection. All operational debriefings should select protocols and train the debriefers to minimize psychological harm to the participants.

In conclusion, routine use of individual debriefing or the use of group psychological debriefing for victims of trauma cannot be recommended. There is insufficient evidence for the use of psychological debriefing for professional work groups immediately after critical incidents, though no evidence of harm. The use of post-deployment psychological debriefing in the military is not recommended due to the fact that other forms of psychological training were found to be generally equivalent; there is no evidence of harm. Of importance is the fact that other early treatment interventions have been found to prevent PTSD in symptomatic individuals (see Annotation A2: [Brief Early Cognitive-Behavioral Intervention](#)). It appears appropriate to continue to focus resources on identifying and treating those with symptoms arising after trauma. The emphasis should be placed on the early detection of those at risk of developing psychopathology and those early interventions that have been found effective should be aimed at this group.

EVIDENCE TABLE

	Evidence	Sources	LE	QE	NET	SR
1	Individual or group psychological debriefing of victims of traumatic events is ineffective and may have adverse effects	Bisson et al., 2009 (ISTSS) Campfield and Hill, 2001 Cuijpers et al., 2005 Deville et al., 2008 Hobbs et al., 1996 Mayou et al., 2000 Bisson, 1997 Rose, 2002 (Cochrane SR) Sijbrandji et al., 2006 Van Emmerick et al., 2002	I	Good	Zero Small	D
2	There is insufficient evidence for or against psychological debriefing of professional workgroups (e.g. military, first responders) in the immediate aftermath of critical incidents	Carlier et al., 2000 Deale, et al., 1994 Dolan et al., 1999 Eid et al., 2001 Richards, 2001	I, II-1	Fair	Zero Small	I
3	Psychological debriefing of professional work groups weeks or months after critical incidents is not recommended	Adler et al., 2008 Adler et al., 2009 Deahl et al., 2000	I	Good	Zero, Small	D

LE =Level of Evidence; QE = Quality of Evidence; NET=Net benefit; SR = Strength of Recommendation (see Appendix A)

A2. Brief Early Cognitive-Behavioral Intervention

Research suggests that relatively brief but specialized interventions may effectively prevent PTSD in some subgroups of trauma patients. Several controlled trials have suggested that brief (i.e., 4 to 5 sessions) cognitive-behavioral treatments, comprised of education, breathing training/relaxation, imaginal and in vivo exposure, and cognitive restructuring, delivered within weeks of the traumatic event, can often prevent PTSD in survivors of sexual and non-sexual assault (Foa et al., 1995), MVAs, and industrial accidents (Bryant et al., 1998, 1999). Brief intervention with patients hospitalized for injury has been found to reduce alcohol consumption in those with existing alcohol problems (Gentilello et al., 1999). Controlled trials of brief early intervention services targeted at other important trauma sequelae (e.g., problems returning to work, depression, family problems, trauma recidivism, and bereavement-related problems) remain to be conducted, but it is likely that targeted interventions may be effective in these arenas for at least some survivors.

At present, it is unknown how much time should elapse after a traumatic experience before cognitive-behavioral intervention is initiated (Litz & Bryant: in Foa 2009 [ISTSS]). If provided too early, individuals who may not need therapy will consume helping resources. For this reason, trials have not commenced before 2 weeks after the trauma (Bryant, 1998, 1999, 2003).

Target Population for Brief CBT

Studies that have targeted all trauma survivors, regardless of levels of stress reactions, have been ineffective in preventing PTSD (Roberts et al., 2009b). Trauma-focused CBT has been found to be effective in reducing and preventing post-traumatic stress symptoms in individuals who were symptomatic, especially those meeting criteria for ASD (Roberts et al., 2009a; Stapleton, 2006). These interventions have focused on the traumatic experience via exposure to memories and trauma reminders, sometimes combined with cognitive therapy or other behavioral interventions. One study has indicated that combined imaginal and in vivo exposure is significantly more effective than pure cognitive restructuring in reducing subsequent PTSD among individuals diagnosed with ASD (Bryant, et al., 2008a). This is an important finding that requires replication.

Cognitive behavioral therapy was more effective in reducing symptoms than a self-help booklet or repeated assessment. The combination of an elevated initial symptom score and failure to improve with self-monitoring was effective in identifying a group of patients with early PTSD symptoms who were unlikely to recover without intervention. (Ehlers, 2003)

Evidence Table

	Evidence	Sources	LE	QE	SR
1	Brief cognitive-behavioral intervention (4 to 5 sessions) may prevent PTSD in those reporting clinically significant symptoms of acute post-traumatic stress	Roberts, 2009a (§) Kornor, 2008 Bryant et al., 1998, 1999 Bryant et al., 2003, 2008a	I	Good	A
2	Multisession early psychological interventions for asymptomatic trauma survivors are not effective and may be harmful	Roberts, 2009b (§)	I	Good	D

LE = Level of Evidence; QE = Quality of Evidence; SR = Strength of Recommendation; §-Systematic Review (see Appendix A)

A3. Other Early Interventions

Efficacious early interventions have largely been structured as brief versions of effective PTSD treatments. This suggests that other interventions may be effective in preventing PTSD, but more research is needed to investigate other intervention methods. Some non-CBT interventions have received research attention. For example, brief structured writing has been found ineffective in preventing PTSD in two studies (van Emmerik, et al., 2008; Bugg, et al., 2009). A memory restructuring intervention failed to show preventive impact relative to a control condition (Gidron et al., 2007). Likewise, providing self-help information as a preventive psychoeducation strategy to prevent PTSD has not been found to be efficacious (Scholes et al., 2007; Turpin et al., 2005)

Table 1 - 2 Brief Psychotherapy Studies to Prevent the Development of PTSD

Author, Year	Results	n	Trauma	LE	QE	NB
Cognitive Behavioral Therapy (CBT)						
Bryant, 1998a	Brief (5 sessions) CBT within 2 weeks > Supportive counseling in preventing PTSD	24	Civilian	I	Fair	Mod
Bryant, 1999	Brief (5 sessions) PE or PE + Anxiety mgmt > Supportive counseling in preventing PTSD	45	Civilian with ASD	I	Good	Sub
Bryant, 2003	Brief (5 sessions) CBT > Supportive Counseling in preventing PTSD	24	ASD after mTBI	I	Good	Sub
Bryant, 2008a	Brief (5 sessions) ET > CT > No Tx in preventing PTSD	90	ASD civilians	I	Good	Sub
Resnick, 2007	Video intervention reduces PTSD vs. standard care	140	Sexual assault	I	Good	Mod
Self-Help (SH)						
Scholes, 2007	no group differences between SH and no Tx	227	Emergency Room	I	Good	Zero
Turpin, 2005	no group differences in PTSD between SH and no Tx	141	N/R	I	Fair	Zero
Structured Writing Therapy (SWT)						
van Emmerik, 2008	Efficacy of SWT was comparable to CBT	125	ASD and PTSD pts	I	Good	Mod
Bugg, 2009	No differences between writing and self help (information only) groups	67	Emergency room	I	Mod	Small
Memory Structured Intervention (MSI)						
Gidron 2007	No differences between MSI and supportive listening.	34	traffic accident victims	I	Fair	Zero

ET = Exposure therapy; CT= Cognitive Therapy; Tx=Treatment

LE =Level of Evidence; QE = Quality of Evidence;

NB=Net benefit: Sub=Substantial; Mod=Moderate; Zero=None or small

B. Early Pharmacotherapy Interventions to Prevent PTSD

Prevention of PTSD

Few studies have examined the effectiveness of pharmacological treatment for acute symptom management and PTSD prevention immediately following a traumatic event. This includes the use of various agents for the prevention of PTSD (propranolol, hydrocortisone, and gabapentin). Although of interest, none of these approaches is yet advocated in standard treatment guidelines for PTSD (Stein 2009 [SR]). There is insufficient evidence to draw concrete conclusions or make specific recommendations regarding the use of pharmacological agents for prevention of PTSD. While prevention of ASD is ideal, there are currently no evidence-based pharmacological treatment modalities to arrest symptom formation and prevent progression to ASD during the first days and weeks following the traumatic exposure.

Once potential medical causes of neuropsychiatric impairment are ruled out and other immediate needs are met (e.g., physical needs, practical needs for assistance, normalization, and psychoeducation), then both medications and non-pharmacological interventions may be considered. The selection and effectiveness of specific interventions administered acutely are not well supported in the literature. Although there are no evidence-based pharmacological treatments for ASD, there may be a role for pharmacotherapy to aid in the management of specific symptoms (e.g., insomnia, pain, hyperarousal).

Use of Benzodiazepines

Historically, benzodiazepines were the primary agent in PTSD treatment, particularly alprazolam and clonazepam. However, based on the limited data that are available, benzodiazepine administration should be used with caution (or discouraged) both in acute stress disorder (ASD) and post-traumatic stress disorder (PTSD), due to lack of evidence for effectiveness and risks that may outweigh potential benefits. Although benzodiazepines have been frequently used “as needed” and continuously for anxiety disorders, including to augment evidence-based treatment modalities in PTSD, there is theoretical, animal, and human evidence to suggest that benzodiazepines may actually interfere with the extinction of fear conditioning or *potentiate* the acquisition of fear responses and worsen recovery from trauma. Benzodiazepine should be used especially cautiously in combat veterans with PTSD because of the very high co-morbidity of combat-related PTSD with alcohol misuse and substance use disorders (upwards of 50 percent of co-morbidity) and potential problems with tolerance and dependence. Once initiated, benzodiazepines can be very difficult, if not impossible, to discontinue due to significant withdrawal symptoms compounded by the underlying PTSD symptoms.

Gelpin et al. (1996), in an open-labeled study, treated patients who had recently experienced trauma (within the past 18 days) and were experiencing excessive distress (panic, agitation, or persistent insomnia) for up to 6 months with alprazolam or clonazepam. These 13 patients were compared with a control group of recently traumatized individuals matched for demographics and symptoms (using the Impact of Events Scale). On follow-up, PTSD occurred at a significantly higher rate in the benzodiazepine-treated group (9/13, 69 percent) than in the control group (2/13, 15 percent). Although the strength of the evidence is low (open-labeled study), the study suggested that benzodiazepines may worsen outcomes in the acute period following trauma, and the authors referenced animal data consistent with the hypothesis that benzodiazepines may potentiate the acquisition of fear responses.

Mellman, Bustamante et al. (2002) conducted a double-blind randomized controlled study, during the acute period after trauma (mean 2 weeks after trauma). A short-term (7 day) evening use of temazepam in patients with significant ASD/PTSD symptoms was compared with placebo (11 patients in each group). The study showed no benefits in preventing PTSD, and the trend was similar to the Gelpin study, with 6 of 11 (55 percent) patients who received temazepam developing PTSD, compared with 3/11 (27 percent) who received placebo.

Davydow, (2008) in a literature review of the risk factors for developing PTSD after serious trauma (requiring ICU treatment), found that greater ICU benzodiazepine administration was one of the consistent predictors of PTSD.

Benzodiazepines can be effective against anxiety and insomnia, but they should be used with caution in patients with ASD and PTSD because of the high frequency of co-occurring substance abuse and dependence in patients with PTSD. The balance between benefit and potential risks, including the risks of dependency and of withdrawal after discontinuation, should be evaluated when considering benzodiazepines in patients with acute stress reaction.

Sleep Disturbance

One of the most difficult symptoms to address in the immediate aftermath of exposure to a traumatic event is sleep disturbance. Theoretically, the more sleep impairment and trauma-related nightmares an individual continues to experience, the more likely he or she is to continue to experience the symptoms of ASD and/or subsequently develop PTSD. There is little evidence for the effectiveness of any sleep aids in the immediate aftermath of trauma.

For Recommendations and discussion of the evidence for sleep disturbance, see [Module I-3: A. Sleep Disturbances](#)

Ineffectiveness of Propranolol

Several studies have examined the use of propranolol, hydrocortisone, and gabapentin for the prevention of PTSD (Pittman, 2002; Stein, 2007).

Four small and brief clinical trials were identified in the peer-reviewed medical literature that evaluated the use of pharmacological treatments to prevent the development of post-traumatic stress disorder (PTSD) symptoms in traumatized subjects (Pitman, 2002; Stein, 2007; Reist, 2001; Vaiva, 2003). All studies involved immediate post-traumatic administration of propranolol, and one study also included a trial of gabapentin. Two of the studies (Reist, 2001; Vaiva, 2003) were excluded due to poor quality. Pitman (2002) reported a pilot study of 41 patients who were randomized to begin, within 6 hours of the event, a 10-day course of double-blind propranolol (n = 18) versus placebo (n = 23), 40 mg four times daily. Significant improvement of symptoms was noted in the treatment group. Stein (2007) conducted a double-blind, randomized controlled trial of 14 days of the beta-blocker propranolol (n = 17), the anxiolytic anticonvulsant gabapentin (n = 14), or placebo (n = 17), administered within 48 hours of injury to patients admitted to a surgical trauma center. Of 569 accessible, potentially eligible subjects, 48 (8 percent) participated. Although well tolerated, neither study drug showed a significant benefit over placebo on depressive or post-traumatic stress symptoms.

McGhee et al. (2008) examined the relationship between PTSD prevalence and propranolol administration in 603 soldiers injured in OIF/OEF, of whom 226 completed the PTSD Checklist-Military. Thirty-one soldiers received propranolol, and 34 matched soldiers did not. In propranolol patients, the prevalence of PTSD was

32.3 percent vs 26.5 percent in those not receiving propranolol ($P = .785$). These data suggest propranolol does not decrease PTSD development in burned soldiers.

Although some positive results were noted, the size and weak study designs of the investigations do not allow for definitive conclusions regarding the value of these medications in preventing the development of PTSD symptoms after traumatic events.

Early Pain Intervention to Prevent PTSD

Acute pain caused by physical injury may by itself be a precursor for PTSD. Injury that is also associated with traumatic exposure increases the risk for PTSD. When pain is treated early and aggressively, patients may have the best chance of getting better. Though many fear addiction from opioids, they can be an important part of halting the pain cycle. Few studies have investigated the effect of pain reduction in the early stages after injury and the development of PTSD.

Bryant et al. (2008c) examined the influence of acute administration of morphine as protective against the development of PTSD in a consecutive sample of patients admitted to hospital after traumatic injury ($n = 155$). The patients who met criteria for PTSD at 3 months (14 percent) received significantly less morphine than those who did not develop PTSD; there was no difference in morphine levels in those who did and did not develop a major depressive episode or another anxiety disorder. The authors suggested that administration of morphine in the acute post-traumatic stage may limit fear conditioning in the aftermath of traumatic injury and may serve as a secondary prevention strategy to reduce PTSD development.

Holbrook et al. (2010) analyzed data for 696 military personnel (mostly male, mean age about 24) who were hurt during OIF but who did not have serious traumatic brain injury. About one-third (35 percent) of the injured personnel developed PTSD. The finding was that those who had been administered morphine shortly after their injury (60 percent versus 76 percent) were less likely to develop PTSD (ORs ranging from 0.48 to 0.66, $P < 0.05$ for all). Several factors, including severity and mechanism of injury, need for amputation, resuscitation, and the presence of mild traumatic brain injury, were adjusted for. Although causality could not be established, the authors concluded that a reduction in perceived pain levels through the use of morphine or other opioids, as part of trauma care, may lower the rate of PTSD onset after major trauma.

Other Medications

One study that involved administration of cortisol at the time of cardiac bypass surgery (Schelling, 2004) suggested that patients who received stress doses of cortisol had lower PTSD symptom scores than a comparison group (that did not receive cortisol) when questioned six months after surgery.

A crossover trial of 1 month of low-dose cortisol therapy evaluated 3 patients diagnosed with PTSD (Aerni, 2004). The authors reported that each patient demonstrated improvement on at least 1 self-reported PTSD measure. The study was excluded from analysis for this guideline due to small numbers.

Conclusions:

There is a small amount of evidence that suggests that administration of cortisol at the time of, or immediately after, a traumatic event may have a preventive effect on the subsequent development of PTSD symptoms. Little evidence exists suggesting

that gabapentin or propranolol are of value in preventing the development of PTSD after trauma.

Due to the limited support of evidence, the use of medications in the early period post-trauma to prevent PTSD cannot be recommended. Pharmacotherapy may be considered to aid in the management of specific symptoms (e.g., addressing sleep disturbance, irritability, or control of pain).

EVIDENCE TABLE

	Evidence	Sources	LE	QE	Net Effect	SR
1	Pharmacotherapy prophylaxis for PTSD	Stein, 2006 [§]	I	Poor	-	I
2	Propranolol to reduce hyperarousal, excessive arousal, or panic attacks	Pittman et al., 2002 Stein et al., 2007 Reist et al., 2001 Vaiva et al., 2003 McGhee et al., 2008	I	Fair	Small	C
3	Benzodiazepines for hyperarousal, excessive arousal, or panic attacks	Gelpin et al., 1996 Melman et al., 2002 Davydow, 2008	II-2 I	Fair	Small/Neg	D

LE = Level of Evidence; QE = Quality of Evidence; SR = Strength of Recommendation § = Systematic Review (see Appendix A)

Table I - 3 Pharmacological Studies to Prevent the Development of PTSD

Author, Year	Results	n	Trauma	LE	QE	NB
Propranolol						
Pitman, 2002	Significant improvement post-acute stress	41	Any	I	Good	Small
Stein, 2007	No difference from placebo (gabapentin or propranolol)	48	Severe physical injury	I	Good	Zero
Reist, 2001	Recall of arousing story was reduced	38	N/R	I	Poor	EXC
Vaiva, 2003	PTSD rate and symptoms lower in the propranolol group	19	MVA, assault	I	Poor	EXC
Cortisol						
Schelling, 2004	Hydrocortisone administered during cardiac surgery reduced chronic stress symptom scores	91	Bypass surgery		Fair	Mod
Aerni, 2004	Low-dose cortisol for 1 month reduces the cardinal symptoms of PTSD	3			Poor	EXC
Morphine						
Bryant et al. (2008c)	Patients with PTSD received sig. less morphine than those who did not develop PTSD	155	Injury	II	Fair	Mod
Holbrook et al. (2010)	Wounded morphine shortly after their injury reduced development of PTSD		Combat injury	II-2	Fair	Mod

LE = Level of Evidence; QE = Quality of Evidence;

NB = Net benefit: Sub = Substantial; Mod = Moderate; Zero = None or small; N/R = no reported; EXC = Excluded;

Module I-2. TREATMENT FOR POST-TRAUMATIC STRESS DISORDER (PTSD)**A. Selection of Therapy for PTSD**

In clinical practice, providers and patients alike are often faced with important decisions relating to type, number, frequency, and dose of various psychotherapies and pharmacological interventions. Therapies may be broadly divided into (1) evidence-based psychotherapies (e.g., trauma-focused therapies or stress inoculation training), (2) evidence-based pharmacotherapies (particularly SSRIs and SNRIs), and (3) key adjunctive or supplemental treatment modalities.

Providers should explain to all patients with PTSD the range of therapeutic options that are available and effective for PTSD. This discussion should include general advantages and disadvantages associated with each therapeutic option (including side-effects/risks, and time commitment required to complete the therapy). In general, PTSD therapy research has provided sufficient evidence to recommend medication or evidence-based psychotherapy as a first-line treatment. Among the A-level evidence-based psychotherapy treatments, the research suggests that they are much more equivalent in their effectiveness than many clinicians may realize. There is insufficient evidence to suggest for or against combined medication and psychotherapy over only one of the two approaches. Patient preferences and the particular evidence-based treatments that the provider has the most training/expertise in will often drive the initial therapeutic approach.

The level or intensity of care is guided by illness trajectory (degree of chronicity and illness severity), observed outcomes, and previous therapies. Active follow-up is used to determine the level of care each patient requires over time. The provider along with the patient may determine that the first-line therapy will be psychotherapy. If, after a period of treatment, the patient is not responding adequately, the patient may be “stepped up” in therapeutic intensity by adding a medication, such as a selective serotonin reuptake inhibitor (SSRI) to the regimen of ongoing psychotherapy, and reassessing whether additional measures need to be taken to address co-morbid conditions. It may be helpful to coordinate care using a collaborative care approach based in primary care that includes care management. Although supporting evidence is lacking for collaborative care approaches, these approaches have been shown to be useful in the management of depression, chronic pain, chronic fatigue, and other conditions, and are now being tested for PTSD in some military and VA treatment facilities.

RECOMMENDATIONS

1. Providers should explain to all patients with PTSD the range of available and effective therapeutic options for PTSD.
2. Patient education is recommended as an element of treatment of PTSD for all patients and the family members. [C]
3. Patient and provider preferences should drive the selection of evidence-based psychotherapy and/or evidence-based pharmacotherapy as the first line treatment.
4. Psychotherapies should be provided by practitioners who have been trained in the particular method of treatment.
5. A collaborative care approach to therapy administration, with care management, may be considered, although supportive evidence is lacking specifically for PTSD.

B. PSYCHOTHERAPY INTERVENTIONS FOR PTSD

Psychotherapy interventions are aimed at reduction of symptoms severity, improvement of global functioning, and improvement in quality of life and functioning in social and occupational areas. Psychotherapy for PTSD may also have benefits in improving co-morbid physical health conditions, but this is not specifically the focus of treatment.

Table I-4 Psychotherapy Interventions for Treatment of PTSD

SR	Balance of Benefit and Harm			
	Significant Benefit	Some Benefit	Unknown Benefit	None
A	Trauma-focused psychotherapy that includes components of exposure and/or cognitive restructuring; or, Stress inoculation training			
C		Patient Education Imagery Rehearsal Therapy Psychodynamic Therapy Hypnosis Relaxation Techniques Group Therapy		
I		Family Therapy	WEB-Based CBT Acceptance and Commitment Therapy Dialectical Behavioral Therapy	

SR = Strength of Recommendation (see Appendix A)

Effective Psychotherapies for PTSD

There are significant difficulties in categorizing the different evidence-based psychotherapies that have been found to be most effective for PTSD. There are a number of reasons for this difficulty, including the diversity of treatments available, a lack of a common terminology to describe the same treatment components, the specific ways in which similar components are manualized or packaged, and lack of consensus between proponents for specific treatments.

The evidence-based psychotherapeutic interventions for PTSD that are most strongly supported by RCTs can be considered broadly within in the **trauma-focused psychotherapy** category or **stress inoculation training**. Trauma-focused psychotherapies for PTSD refer to a broad range of psychological interventions based on learning theory, cognitive theory, emotional processing theory, fear-conditioning models, and other theories. They include a variety of techniques most commonly involving exposure and/or cognitive restructuring (e.g. Prolonged Exposure, Cognitive Processing Therapy and Eye movement Desensitization and Reprocessing). They are often combined with anxiety management/stress reduction skills focused specifically on alleviating the symptoms of PTSD. Psychoeducation is another important component of all interventions. Other CBT interventions that are not trauma-focused are less effective.

Stress inoculation training (SIT) does not necessarily focus as explicitly on the exploration of traumatic memories, it is included as a first-line alternative to trauma-focused psychotherapies for treating PTSD. SIT, which was developed originally for anxiety disorders and then modified for rape victims and later for PTSD, has been extensively studied in the treatment of PTSD. It has also been compared head-to-head with trauma-focused psychotherapies, and has been shown to be effective in assisting individuals with reducing trauma-related avoidance, anxiety, and cognitions, and there is good evidence that it is equivalent in efficacy to the trauma-focused psychotherapies.

In formulating the specific recommendations for psychotherapy, the working group evaluated the empirical evidence, considering randomized trials as the highest level of the evidence-based hierarchy. It should be noted that therapy provided in clinical trial settings differs from therapy that is practiced in day-to-day care, and the recommendations represent the techniques and protocols as they were studied and reported in the RCTs.

Packaging of Manualized Approaches of Therapy

The working group recognized that despite various perspectives on how to categorize the most effective PTSD psychotherapies, all of the modalities supported by a level-A evidence likely have overlapping mechanisms of action. Trauma-focused psychotherapies include exposure techniques that involve repetitive review of traumatic memories and trauma-related situations, cognitive techniques that focus on identification and modification of trauma-related beliefs and meanings, and/or stress reduction techniques designed to alleviate PTSD symptoms and assist patients in gaining control and mastery over the physiological reactivity.

SIT protocols that have been tested in clinical trials often include components of cognitive restructuring or in-vivo exposure, and some SIT techniques (e.g. breathing retraining, relaxation) are incorporated into virtually every other trauma-focused psychotherapy that has been studied in RCTs. Consequently, it is difficult to disentangle the relative contribution of SIT techniques in the efficacy of the other trauma-focused psychotherapy treatments.

Components of efficacious interventions for PTSD, studied in clinical trials, have been packaged in various ways. Most RCTs have manualized the techniques to ensure the fidelity of treatment for use by the investigators. Some manualized approaches have gained wide popularity, but there is no evidence that they are any more effective than less accepted protocols that package the core components of trauma-focused therapies in different ways. The core components used in the vast majority of A-level interventions have involved combinations of exposure (particularly in-vivo and imaginal/oral narrative), cognitive restructuring, relaxation/stress modulation techniques, and psychoeducation. Very few studies have dismantled these individual components to assess the relative efficacy of each technique independently. The approaches that have been most extensively studied can be generally grouped into four main categories based on the therapeutic components given the most emphasis, or the specific way in which these components were packaged, although there is overlap between these groups:

- *Exposure-based therapies (ET)* emphasize in-vivo, imaginal, and narrative (oral and/or written) exposure, but also generally include elements of cognitive restructuring (e.g. evaluating the accuracy of beliefs about danger) as well as relaxation techniques and self-monitoring of anxiety. Examples of therapies that include a focus on exposure include Prolonged Exposure Therapy, Brief Eclectic Psychotherapy, Narrative Therapy, written exposure therapies, and many of the

cognitive therapy packages that also incorporate in-vivo and imaginal/narrative exposure.

- *Cognitive-based therapies (CT)* emphasize cognitive restructuring (challenging automatic or acquired beliefs connected to the traumatic event, such as beliefs about safety or trust) but also include relaxation techniques and discussion/narration of the traumatic event either orally and/or through writing. Examples include Cognitive Processing Therapy and various cognitive therapy packages tested in RCTs
- *Stress Inoculation Training (SIT)* (the specific anxiety management package most extensively studied in the PTSD literature), places more emphasis on breathing retraining and muscle relaxation, but also includes cognitive elements (self-dialogue, thought stopping, role playing) and, often, exposure techniques (in-vivo exposure, narration of traumatic event).
- *Eye Movement Desensitization and Reprocessing (EMDR)* (extensively studied in a large number of RCTs) closely resembles other CBT modalities in that there is an exposure component (e.g. talking about the traumatic event and/or holding distressing traumatic memories in mind without verbalizing them) combined with a cognitive component (e.g., identifying a negative cognition, an alternative positive cognition, and assessing the validity of the cognition), and relaxation/self-monitoring techniques (e.g., breathing, “body scan”). Alternating eye-movements are part of the classic EMDR technique (and the name of this type of treatment); however, comparable effect sizes have been achieved with or without eye movements or other forms of distraction or kinesthetic stimulation. Although the mechanisms of effectiveness in EMDR have yet to be determined, it is likely that they are similar to other trauma-focused exposure and cognitive-based therapies.

A brief description and summary of the supporting evidence for each of the above, and other therapy approaches is included in the following Sections B1 to B12 of the Discussion.

RECOMMENDATIONS

Treatment Options:

1. Strongly recommend that patients who are diagnosed with PTSD should be offered one of the evidence-based trauma-focused psychotherapeutic interventions that include components of exposure and/or cognitive restructuring; or stress inoculation training. [A]

The choice of a specific approach should be based on the severity of the symptoms, clinician expertise in one or more of these treatment methods and patient preference, and may include an exposure-based therapy (e.g., Prolonged Exposure), a cognitive-based therapy (e.g., Cognitive Processing Therapy), Stress management therapy (e.g., SIT) or Eye Movement Desensitization and Reprocessing (EMDR).

2. Relaxation techniques should be considered as a component of treatment approaches for ASD or PTSD in alleviating symptoms associated with physiological hyper-reactivity. [C]
3. Imagery Rehearsal Therapy [IRT] can be considered for treatment of nightmares and sleep disruption. [C]
4. Brief Psychodynamic Therapy can be considered for patients with PTSD. [C]

5. Hypnotic Techniques can be considered, especially for symptoms associated with PTSD, such as pain, anxiety, dissociation, and nightmares, for which hypnosis has been successfully used. [C]
6. There is insufficient evidence to recommend for or against Dialectical Behavioral Therapy (DBT) as first-line treatment for PTSD [I]
 - Dialectical Behavioral Therapy can be considered for patients with a borderline personality disorder typified by parasuicidal behaviors. [B]
7. There is insufficient evidence to recommend for or against Family or Couples Therapy as first-line treatment for PTSD; Family or Couples therapy may be considered in managing PTSD-related family disruption or conflict, increasing support, or improving communication. [I]
8. Group Therapy may be considered for treatment of PTSD [C]
 - There is insufficient evidence to favor any particular type of group therapy over other types
 - Patients being considered for group therapy should exhibit acceptance for the rationale for trauma work, and willingness to self-disclose in a group.
9. Consider augmenting with other effective evidence-based interventions for patients who do not respond to a single approach.
10. Supportive psychotherapy is not considered to be effective for the treatment of PTSD. However, multiple studies have shown that supportive interventions are significantly more helpful than no treatment, and they may be helpful in preventing relapse in patients who have reasonable control over their symptoms and are not in severe and acute distress.

Note:

Approaches may also be beneficial as parts of an effectively integrated approach. Most experienced therapists integrate diverse therapies, which are not mutually exclusive, in a fashion that is designed to be especially beneficial to a given patient.

Delivery of care:

1. Telemedicine interventions that involve person-to-person individual treatment sessions appear to have similar efficacy and satisfaction clinically as a direct face-to-face interaction, though data are much more limited than for face-to-face encounters. [C]
 - a. Telemedicine interventions are recommended when face-to-face interventions are not feasible due to geographic distance between patient and provider or other barriers to patient access (e.g., agoraphobia, physical disability); when the patient would benefit from more frequent contact than is feasible with face-to-face sessions; or when the patient declines more traditional mental health interventions.
 - b. Providers using telemedicine interventions should endeavor to maintain and strengthen the therapeutic relationship, build patient rapport, stress practice and assignment completion, and ensure adequacy of safety protocols using similar techniques as they do in a face-to-face session.

- c. Providers using technology-assisted interventions should take steps to ensure that their work complies with the regulations and procedures of the organization in which they are employed, legal standards, and the ethical standards of their professions. Patient confidentiality and safety should be monitored closely.
2. There is insufficient evidence to recommend for or against Web-based interventions as a stand-alone intervention or as an alternative to standard mental health treatment for PTSD. [I]

If used:

- a. Clinicians should carefully review the content of any web-based materials to ensure their accuracy and ethical application before recommending use to patients.
- b. Web-based approach may be used where face-to-face interventions are not feasible (e.g., geography limits access to other forms of treatment) or when patients decline more traditional mental health interventions. It has also been suggested that web-based interventions may provide more confidentiality than more traditional approaches.
- c. Providers should regularly encourage patients to complete the intervention and endeavor to maintain and strengthen the therapeutic relationship, build patient rapport, stress practice and assignment completion, and ensure adequacy of safety protocols. Availability of telephone contact for initial assessment or other reasons (e.g. emergencies, suicidality/homicidality, or follow-up of specific problems) should be considered.
- d. Providers using technology-assisted interventions should take steps to ensure that their work complies with the regulations and procedures of the organization in which they are employed, legal standards, and the ethical standards of their professions. Patient confidentiality and safety should be monitored closely.

DISCUSSION

B1. Therapies that More Strongly Emphasize Cognitive Techniques (CT)

Cognitive therapy (CT) techniques emerged principally from the work of Albert Ellis (1962) and Aaron Beck (1964). Initially manualized for the treatment of depression, CT techniques have been successfully adapted to the treatment of a diverse set of psychiatric disorders, including PTSD (Freeman & Datillo, 1992; Freeman et al., 1989; Scott et al., 1989) and have been manualized or packaged in various ways.

Several randomized controlled trials (RCTs) demonstrate the efficacy of CT techniques for a wide range of patients with PTSD, demonstrating its use in treating veterans with combat-related trauma, motor vehicle accident (MVA) survivors, sexual or physical assault victims, and victims of natural disasters. Most RCTs have examined CT as delivered in an individual therapy format, though some studies have investigated group-delivered CT.

For purposes of this guideline, the primary goal of CT techniques is to improve mood and behavior through a deliberate and explicit focus on modifying dysfunctional thoughts, beliefs, and expectations. In theory, while behavioral change is a desirable outcome of CT, the treatment components themselves do not explicitly or directly

target behavioral patterns per se (however, it appears that even cognitive interventions may involve exposure or behavioral components, for example, discussing the meaning of a traumatic event inevitably involves exposing oneself to the memories of that event). Likewise, while exposure-based interventions may result in altered cognitions, exposure therapies, per se, do not involve an explicit focus on cognitive restructuring procedures seen in CT. Nonetheless, in practice it is virtually impossible to conduct cognitive trauma-focused therapy without also involving behavioral or exposure-based components, as it is similarly virtually impossible to conduct behavioral or exposure-based therapy without involving cognitive therapy components.

CT is accomplished through a systematic and prescriptive process of (a) identifying dysfunctional beliefs, (b) challenging and disputing these beliefs by examining the evidence for or against them, and (c) restructuring or replacing these beliefs with those that are more functional, logical, and reality-based. According to theories on which CT is based, traumatic events may lead to distorted beliefs regarding personal safety, self-efficacy, relative danger, future consequences of actions, and availability of support. Over time, these maladaptive beliefs lead to or maintain symptoms of PTSD and impair global functioning. The goal of CT for PTSD is to correct these beliefs, which causes a decrease in symptoms and improves functioning.

The CT treatment protocol for PTSD typically begins with an introduction of how thoughts affect emotions and behavior. The cognitive model of change is introduced and the patient is given a detailed rationale and expectations for participation in therapy are established. Treatment interventions are focused on identifying and clarifying patterns of thinking. Several active techniques are used, such as capturing and recording thoughts about significant events, weighing the evidence in support of these thoughts, challenging distressing trauma-related thoughts, and replacing dysfunctional thoughts with more adaptive ones. Through systematic assignments both during and between therapy sessions, dysfunctional thoughts are examined, challenged, and replaced. As thoughts become more logical and reality-based, symptoms decrease and global functioning improves. CT also emphasizes the identification and modification of distorted core beliefs about self, others, and the larger world. CT teaches that improved accuracy of thoughts and beliefs about self, others, and the world leads to improved mood and functioning.

DISCUSSION

Randomized controlled trials (RCTs) have shown that CT alone is an effective intervention for patients with PTSD (Marks et al., 1998; Cottraux, 2008; Resick, 2008). CT is useful for identifying and modifying the many negative beliefs related to a traumatic experience and can be used effectively to reduce distressing trauma-related thoughts (e.g., about survival guilt, self-blame for causing the trauma, feelings of personal inadequacy, or worries about the future). Modifying thoughts about these and other trauma-related issues can reduce PTSD symptoms and improve mood and functioning. Numerous other trials support CT as a key component of combination treatments.

CT techniques are often delivered as part of treatment “packages” that usually include elements of exposure therapy, trauma-related education, and anxiety management. For example, Cognitive Processing Therapy, which has been manualized and validated for use with female sexual assault–related PTSD in women (Resick et al., 2002) and in veterans (Monson, 2006), combines aspects of CT and exposure therapy. CT can also be delivered in conjunction with a range of other psychological therapies (e.g., EMDR and psychodynamic therapy). CT techniques

may be an especially helpful treatment component when co-morbid depressive and/or anxiety disorders are present.

Contraindications for CT have not been empirically established, but may include psychosis, severe brain damage, or severe intellectual impairment.

Summary of Studies:

Twenty-one relevant clinical trials that evaluated the use of CT for PTSD were analyzed. The trials investigated the effect of CT compared with no-treatment conditions, such as placement on a waiting list, and compared with other therapies. Both single-session therapy and long-term therapy were studied, with the longest therapy lasting 30 weeks, plus additional sessions after the end of formal treatment. Although therapists trained in standardized CT methods provided treatment, the actual content of the therapy was often variable, as was the terminology used to describe it. In these studies, although the patients in the control groups and study groups generally improved over time, there was significantly greater improvement in most treated groups, compared with control groups. The studies that enrolled participants from the general population of PTSD patients examined a primarily female population. There was one clinical trial that enrolled male disaster workers, and one involving veterans.

Follow-up intervals ranged from immediate posttreatment to up to 2 years after completion of therapy. Patient retention rates were generally similar to those observed in studies of other types of therapy, but ranged from 52 percent to 100 percent; few studies were blinded, and most relied on self-reported symptom questionnaires to provide data for analysis.

Nine relevant randomized clinical trials compared the effect of CT with that of a nonactive treatment, such as waitlist control group, treatment as usual (TAU), or repeated assessment (Beck, et al., 2009; Classen, Koopman, Nevill-Manning, & Spiegel, 2001; Difede, et al., 2007; Duffy, Gillespie, & Clark, 2007; Ehlers, et al., 2005; Foa, Zoellner, & Feeny, 2006; Monson, et al., 2006; Sijbrandij, et al., 2007; Smyth, Hockemeyer, & Tulloch, 2008). Both group and individual CT appeared to be effective in reducing PTSD symptoms. This was seen for brief, limited treatment models, and for treatment programs taking several months to complete. Four studies compared the effect of CT with that of therapies described as support, supportive care, or Rogerian support therapy (Blanchard, et al., 2003; McDonagh et al., 2005; Foa, Zoellner, & Feeny, 2006; Cottraux, et al., 2008). In these trials, CT was reported to be superior to supportive care in reducing PTSD or in retaining patients in therapy. Notably, in the Cottraux study, there were more drop-outs from the Rogerian group due to worsening symptoms. Additionally, the CT group patients in this study demonstrated sustained improvements in PTSD symptoms at two years follow-up. Trauma-focused group CT and present-focused group therapy were compared in a single study of Vietnam veterans (Schnurr, et al., 2003). Approximately 40 percent of all participants showed significant change in PTSD symptoms, but neither treatment was superior to the other.

The Trauma-Adaptive Recovery Group Education and Therapy (TARGET) model was studied in a trial that compared it with CT in the treatment of substance abuse patients (Frisman et al., 2008). Some improvement in PTSD symptoms was noted in both groups, but TARGET therapy was reported to produce greater improvement in sobriety self-efficacy. One clinical trial (van Emmerik, et al., 2008) compared CT with a structured writing therapy that included three components: (a) writing in the first person, (b) cognitive self-reappraisal of the writing, and (c) farewell and sharing the

writing. The authors reported improvement in both study groups compared with a wait list group, but detected no differences in efficacy between them.

Recently, researchers have attempted to dismantle treatments to examine their efficacious components. Bryant et al. (2003b) reported that patients who received both CT and ET demonstrated less avoidance, depression, and catastrophic cognitions relative to patients who received ET only, while there was no difference in PTSD symptoms between the groups. In a later four arm study to try to determine what specific components of CBT were more effective, Bryant et al. (2008b) compared pure in-vivo exposure alone; pure imaginal exposure alone; pure in-vivo combined with imaginal exposure; and the combination of CR, in-vivo exposure, and imaginal exposure. The combined treatment was most effective; supporting the notion that effective therapy needs to include some element of cognitive restructuring; unfortunately, there was no CR only group. In addition, none of these treatment groups were reported to include relaxation, breathing retraining, or other stress modulation techniques that are a standard part of virtually all of the ET and CT packages.

Resick et al. (2008) found no difference between patients assigned to receive Cognitive Processing Therapy (CPT) and patients assigned to receive only the cognitive component of CPT. Interestingly, a third group that received only written narrative exposure without any of the other CPT techniques performed nearly as well, with no significant difference compared with full CPT or the cognitive component by the time of the 6-month follow-up. In an attempt to isolate the active ingredients, McDonagh et al. (2005) compared a treatment combining exposure and cognitive therapy elements to both a waitlist control group and a group given Present-Centered Therapy (PCT), a form of problem-solving therapy designed to eliminate the active ingredients found in CBT. Both treatment groups demonstrated improved symptoms over the waitlist control group but did not differ between themselves.

Bisson (2007) performed a systematic review of the randomized trials of all psychological treatments (Cochrane Collaboration Report). Treatments were categorized as trauma-focused cognitive behavioral therapy/exposure therapy (TFCBT); stress management (SM); other therapies (supportive therapy, non-directive counselling, psychodynamic therapy and hypnotherapy); group cognitive behavioural therapy (group CBT); and eye movement desensitization and reprocessing (EMDR). The results showed that TFCBT did significantly better than waitlist/usual care, and other therapies. Stress management did significantly better than waitlist/usual care. There were no significant differences between TFCBT and SM, and there was no significant difference between other therapies and waitlist/usual care control. Group TFCBT was significantly better than waitlist/usual care. EMDR did significantly better than waitlist/usual care and other therapies. There was no significant difference between EMDR and TFCBT or SM.

Conclusions:

There is good evidence that individual CT is effective in reducing PTSD symptoms, and limited evidence that treatment gains persists for up to 2 years. Additional research is needed to demonstrate the efficacy of CT delivered in a group format. Given the contrasting outcomes of available studies comparing combinations and dismantling components, there are insufficient data to conclude that CT is superior to ET at this time.

EVIDENCE TABLE

	Evidence	Sources	LE	QE	SR
1	CT is effective with civilian men and women exposed to combat and non-combat trauma	Bryant et al., 2003b Bryant et al., 2008b Cottraux et al., 2008 Difede et al., 2007 Duffey et al., 2007 Ehlers et al., 2005 Foa et al., 2005 Lovell, et al., 2001 Marks et al., 1998 Sijbrandij et al., 2007 Smyth, Hockemeyer, & Tulloch, 2008 vanEmmerik, Kamphuis, & Emmelkamp, 2008	I	Good	A
3	CT is effective in treating co-morbid substance abuse and PTSD	Frisman et al., 2001	I	Poor	C
4	CT is effective in treating PTSD in motor vehicle accident survivors	Blanchard et al., 2003	I	Mod	B
5	CT is effective in treating PTSD in a group format	Beck et al., 2009	III	Poor	I
2	CT is effective with military and veterans with combat- and non-combat-related PTSD.	Monson et al., 2006	I	Good	B
3	CT is effective for women with PTSD associated with sexual assault.	Chard, 2005 Foa et al., 2004 Foa, Zoellner, & Feeny, 2006 McDonagh et al., 2005 Resick et al., 2002 Resick et al., 2008	I	Good	A

QE = Quality of Evidence; SR = Strength of Recommendation (see Appendix A)

B2. Exposure Therapy (ET)

Exposure therapy protocols have a high level of evidence for treatment of PTSD, and generally include the components of psychoeducation, imaginal or narrative exposure, in-vivo exposure, and processing of thoughts and emotions. The most commonly used protocol is Prolonged Exposure (PE), although various other exposure protocols have been used. Protocols that provide only a portion of these components (e.g. in-vivo exposure or imaginal exposure in isolation) show less robust effect sizes (e.g., Bryant, 2008b). Imaginal exposure involves encouraging the patient to revisit the experience in imagination, and recalling the experience through verbally describing the physical and emotional details of the trauma. In vivo exposure involves asking the patient to physically confront realistically safe but still feared stimuli (e.g. driving a car after having been in a serious motor vehicle accident). In vivo exposure is typically arranged in a hierarchical order based on the perceived difficulty of confronting each stimulus. In addition, each item on the hierarchy may be titrated to make it more or less difficult depending on the patient's progress in treatment. In the preceding example the patient might first sit in a car in the passenger seat, and then in the driver's seat, and then start the car, etc. The patient repeats each situation until a reduction in the intensity of emotional and

physiological response is achieved, at which point they move on to the next item in their hierarchy.

DISCUSSION

RCTs have shown that Exposure Therapy (ET) helps men and women with PTSD symptoms. RCTs of ET have demonstrated its efficacy in female victims of sexual and non-sexual assault, motor vehicle accidents, male combat-related trauma, war refugees, and mixed trauma populations. Several studies indicate that results are highly comparable between exposure therapy and other forms of trauma focused cognitive behavioral therapy (e.g., cognitive therapy, EMDR, stress inoculation training). Findings regarding efficacy in (mostly Vietnam) combat veterans in VA clinical settings are less consistent and the degree of improvement in PTSD symptoms may be less pronounced, although the number of studies are very limited; preliminary data suggest it is efficacious (Rauch et al., 2009).

The mechanism of ET is thought to be related to a reduction in negative emotions (fear, anxiety, sadness, guilt) associated with their experience through repetitive, therapist-guided confrontation of feared places, situations, memories, thoughts, and feelings. ET usually lasts from 8 to 15 sessions depending on the trauma and treatment protocol. In the most common form of ET, Prolonged Exposure therapy patients are repeatedly exposed to their own individualized trauma stimuli, until their arousal and emotional responses are consistently diminished. However, there are various ways in which ET is packaged. ET providers can vary the pacing and intensity of exposing patients to the most difficult details of their trauma based on the patient's emotional response to the trauma and to the therapy itself.

Several studies indicate that results are comparable between exposure with other forms of cognitive behavioral therapy (e.g., cognitive therapy, EMDR, stress inoculation training, or combinations). Variations on exposure therapy that have promising results include written exposure and exposure in the context of a broader narration of the patient's life. For example, in a three arm dismantling RCT by Resick et al. (2008), written exposure was compared directly with CPT (without the written exposure component), and the full CPT program (including written exposure). Treatment sessions for the written exposure only group consisted of two one-hour sessions to provide overview of treatment and education, followed by five two-hour sessions where the patient was asked to write for approximately 60 minutes alone about their worst traumatic event, followed by reading this to the therapist who provided supportive feedback without any of the cognitive restructuring techniques. The written exposure group did nearly as well as both of the CPT treatment arms (which consisted of 12 one-hour sessions), and on the six month follow-up there was no significant difference between the three groups. This finding was replicated using very different methods in a study by van Emmerick, et al. (2008) who found that a structured writing therapy was equivalently efficacious in the treatment of PTSD as cognitive therapy when both were compared with a no treatment control group. These data strongly support the notion that a systematic writing narrative process with therapist involvement may be just as effective in alleviating symptoms as any of the more widely used cognitive therapy techniques.

Oral narrative therapy has also been shown to be highly effective in treating PTSD in war-ravaged refugee populations. In one study of Rwandan refugees with PTSD and severe war-related trauma (Neuner, 2008), lay counselors had patients construct a narration of their life from birth to the present while focusing on detailed exploration of specific traumatic experiences. This resulted in significant improvement in PTSD symptoms, with effects comparable to any of the most cited CPT or PE studies in

U.S. or European clinical samples. Increasingly, virtual (computer based) exposure techniques and strategies are being utilized to accomplish exposure therapy. However, to date, there are no randomized studies of virtual reality compared with either wait list or standard exposure techniques that confirm its efficacy.

Another mode of delivery of exposure therapy that has been found to be effective in two RCTs compared with wait-list control group is Brief Eclectic Psychotherapy developed by researchers in the Netherlands. This treatment includes imaginal exposure combined with relaxation, writing assignments, use of mementos from the traumatic experience, exploration of meaning, a farewell ritual, and psychoeducation (Gersons, 2000; Lindauer, 2005).

There have, as yet, been no randomized trials comparing ET with pharmacotherapy, either alone or in conjunction with one another. However, two trials have examined augmentation strategies. In one trial, the addition of ET following 10 weeks of sertraline resulted in reduction in relapse and additional symptom reduction in those patients who either failed to initially respond or partially responded to sertraline (Rothbaum et al., 2006). In a second study, augmentation with paroxetine for patients who partially responded to 6 sessions of ET did not result in additional benefit (Simon et al., 2008).

As with any treatment, patients need to be screened for their suitability prior to undergoing ET as it may temporarily increase their level of distress. Patients living with the threat of domestic violence should not be considered for ET until their security can be assured. ET has not been studied in patients with health problems that preclude exposure to intense physiological arousal. Therefore, providers should use caution when considering ET for patients with current significant suicide risk, substance dependence, or current psychosis and especially in the elderly. Providers should be aware of the possibility of increased distress as patients confront trauma memories and reminders. As in all PTSD treatments, providers must take concrete steps to prepare patients for the treatment (e.g., present clear rationale, explore patient concerns, encourage realistic expectations, and build commitment to the therapy) in order to reduce the risk of dropout.

EVIDENCE TABLE

	Evidence	Sources	LE	QE	SR
1	ET is effective in the treatment of PTSD (compared to wait list, present centered therapy, and other control comparisons)	Basoglu ,2005, 2007 Cloitre, 2002 Cooper et al., 1989 Feske, 2008 Foa et al., 1991 & 1999a Ironson et al., 2002 Keane et al., 1989 Marks et al., 1998 McDonah, 2005 Neuner, 2004, 2008 (life narration), Schnurr,2007 Tarrier et al., 1999 Gersons et al., 2000 Lindauer et al., 2005	I	Good	A

2	ET compared to other forms of therapy shows equivalent results	Bryant, 2003b Bryant, 2008b Foa et al., 1991 & 1999a Foa, 2005 Marks et al., 1998 Paunovic & Ost, 2001 Power, 2002 Resick, 2002 Resick & Nishith, 2001 Resick, 2008 (written exposure) vanEmmerik, 2008 (written exposure) Rothbaum, 2005 Schnurr, 2001 Tarrier et al., 1999	I	Good	A
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QE = Quality of Evidence; R = Recommendation (see Appendix A)

B3. Stress Inoculation Training (SIT)

Several therapy protocols have been developed that focus on anxiety management and coping skills training, including Stress Inoculation Training and Relaxation Training. Stress inoculation training (SIT), is presented as a tool box or set of skills for managing anxiety and stress (Hembree & Foa, 2000). This treatment was originally developed for the management of anxiety symptoms and adapted for treating women rape trauma survivors. SIT typically consists of education and training of coping skills, including deep muscle relaxation training, breathing control, assertiveness, role playing, covert modeling, thought stopping, positive thinking and self-talk, and in-vivo exposure. The rationale for this treatment is that trauma related anxiety can be generalized to many situations (Rothbaum et al., 2000). The Expert Consensus Guideline Series: Treatment of Post-traumatic Stress Disorder notes that anxiety management is among the most useful psychotherapeutic treatments for patients with PTSD (Foa, Davidson et al., 1999a). A Cochrane meta-analysis found that stress management protocols were as effective as other TF-CBT interventions and EMDR. Relaxation protocols that do not include all of the SIT components have also demonstrated very encouraging results in several studies (Marks et al., 1998; Taylor et al., 2003; Vaughn et al., 1994).

SIT is designed to “inoculate” people with PTSD from heightened stress responses through teaching anxiety management skills which can include:

- Relaxation training: teaching patients to control fear and anxiety through the systematic relaxation of the major muscle groups
- Breathing retraining: teaching slow, abdominal breathing to help the patient relax and/or avoid hyperventilation with its unpleasant and often frightening physical sensations
- Positive thinking and self-talk: teaching the person how to replace negative thoughts (e.g., ‘I’m going to lose control’) with positive thoughts (e.g., ‘I did it before and I can do it again’) when anticipating or confronting stressors. This is often combined with in-vivo exposure
- Assertiveness training: teaching the person how to express wishes, opinions, and emotions appropriately and without alienating others

- Thought stopping: distraction techniques to overcome distressing thoughts by inwardly shouting 'stop' (Foa et al., 1999b)

Many SIT protocols also include cognitive restructuring and other elements of exposure therapy.

DISCUSSION

There have been two RCTs that have evaluated SIT and both found SIT to be effective with women who have survived sexual assault. A study by Foa and colleagues (1991) with 45 female sexual assault victims compared SIT, Prolonged Exposure (PE) (see Annotation B2), Supportive Counseling (SC) and wait list control. SIT was found to be the most effective treatment for short-term symptom improvement and both SIT and PE were effective for long term improvement with PE superior to SIT. Rothbaum (2001) reports that the "results suggested that all conditions produced improvement on all measures immediately post-treatment and at follow-up. At follow-up, clients who received PE continued to improve after treatment termination, whereas clients in the SIT and SC conditions evidenced no change between post-treatment and follow-up." Another study with 96 female sexual assault victims compared SIT, PE, combined SIT and PE, and wait list controls (Foa et al., 1999a). The study found that all treatments were better than wait list control for ameliorating PTSD severity at post-treatment and at the 6-month follow-up. Interestingly, although all three treatments were effective, the combined treatment was not superior to either SIT or PE alone. Although this may be related to the fact that clients in the combined treatment group received less PE-or SIT-specific techniques than participants in the individual treatments, the most likely explanation presented in the paper was an uncharacteristically low drop-out rate that happened to occur in the PE-only group.

A study of 15 women by Kilpatrick et al. (1982) found SIT to be effective in reducing rape-related fear and anxiety.

Motor vehicle accident survivors (Hickling & Blanchard, 1997) had a 68 percent reduction of PTSD symptoms after involvement in a modified version of Foa et al.'s SIT/PE combination program.

A controlled study comparing three different forms of relaxation (relaxation, relaxation plus deep breathing, and relaxation plus deep breathing plus biofeedback) for 90 Vietnam veterans found that all treatments were equally effective in leading to improvement (Watson et al., 1997).

Vaughn, et al. (1994) found that relaxation training was superior to waitlist. Taylor et al (2003) also found support for reduction of PTSD with a relaxation protocol though the effects were less than for ET. In a head-to-head comparison study by Marx (1998), relaxation training produced was nearly equivalent to PE.

EVIDENCE TABLE

	Evidence	Sources	LE	OE	SR
1	SIT is effective in the treatment for PTSD.	Foa et al., 1999a Foa et al., 1991 Kilpatrick et al., 1982 Rothbaum, 2001	I	Good	A

LE=Level of Evidence QE=Quality of Evidence; SR= Strength of Recommendation (see Appendix A)

B4. Eye Movement Desensitization and Reprocessing (EMDR)

Eye Movement Desensitization and Reprocessing (EMDR) is a psychological treatment designed to alleviate the distress associated with traumatic memories (Shapiro, 1989a, 1989b). The objective of EMDR is to assist patients to access and process traumatic memories while bringing them to an adaptive resolution (Shapiro, 2001).

In EMDR, the therapist collaborates with patients to: (1) access a disturbing image associated with the traumatic event; (2) solicit the experience of body sensations associated with the disturbing image; (3) identify an aversive self-referring cognition (in concise words) that expresses what the patient “learned” from the trauma, and (4) identify an alternative positive self-referring cognition that the patient wishes could replace the negative cognition. The patient is then asked to hold the disturbing image, sensations, and the negative cognition in mind while tracking the clinician's moving finger back and forth in front of his or her visual field for about 20 seconds. In successive tracking episodes, the patient concentrates on whatever changes or new associations have occurred. Eye movement episodes are repeated until there are no new associations. Subsequent tracking episodes attempt to replace the negative cognitive self-statement with the alternate positive cognition.

Between sessions, the patient is directed to keep a journal of any situations that provoke PTSD symptoms and of any new insights or dreams about the trauma. The number of sessions is dependent upon observed improvements and the number of traumatic events experienced.

Within a session, standard self-rating scales document changes in the intensity of the symptoms and the negative cognition, and the patient's acceptance of the alternative positive cognition. The patient reports following each set of eye movement episode to inform the therapist of the strength of both negative and positive cognitions; changes in cognitions, the images, emotions, or body sensations.

EMDR protocols allow for substitution of left-right alternating tone or touch as modifications to the use of the eye movements, suggesting that it is not the eye movements per se, but rather side to side alternating stimulation that is sought. Studies attempting to ascertain the relative contribution of the eye-movement component suggest that comparable outcomes are attained with or without eye movements. These findings are seen as indicating that this aspect (i.e., eye-movements or alternating stimulation of any type) of the treatment protocol may not be critical components.

Given the success of EMDR and the lack of support for the alternating stimulation components, many theorists are considering the active ingredients for the observed treatment gains. Specifically, EMDR is gaining acceptance as a treatment that shares components with other existing, successful treatments. Derived from desensitization strategies, EMDR counters avoidance of the traumatic memories and related cues by repeatedly accessing the aversive traumatic images themselves, promotes emotional processing by soliciting the emotional responses attendant to the aversive memories; identifies a novel and alternative view of the traumatic experience in conjunction with the patient, and then challenges the patient to consider the validity or accuracy of the alternative perspective. With the focus upon physiological arousal and reactivity, EMDR as a desensitization treatment also provides a component of arousal management that is inherent in the treatment. Thus, EMDR at its most basic level incorporates components of a) exposure to trauma related cues; and b) processing of emotional responses. Each of these EMDR components involves efforts

to mitigate strategic avoidance reactions theoretically viewed as maintaining current symptomatology. EMDR also includes: c) elements of corrective and rational restructuring of the patient's views of the traumatic event; and d) self monitoring of cognitive and emotional responses that are often viewed as key homework components of cognitive behavior therapy in general, and e) a focus on heightened physiological arousal and reactivity.

DISCUSSION

EMDR possesses efficacy for treating patients with PTSD: this conclusion is based upon a thorough review of the literature in the treatment guidelines generated by a task force for the International Society for Traumatic Stress Studies (Spates et al., 2009) as well as by Division 12 of the American Psychological Association (APA) and a Cochrane review (Bisson 2007). The United Kingdom's NICE Guidelines for PTSD (2005) also recommend EMDR as a treatment, supported by multiple efficacy studies. While the results of numerous controlled published studies found medium to large effect sizes for EMDR, there is no evidence that EMDR more efficient or rapid than other forms of cognitive behavioral treatment. Similarly, suggestions that EMDR is more easily tolerated than other psychological treatments remain unsupported empirically.

Results of clinical trials, meta-analytic studies, review articles, and extant practice guidelines suggest that EMDR successfully treats symptoms of PTSD when compared to no treatment or delayed treatment conditions. When compared to other treatment modalities, most studies reviewed indicated that EMDR possessed comparable efficacy to other well-accepted cognitive behavioral treatments to include stress inoculation training (SIT) and exposure therapies.

Maxfield and Hyer (2002) conducted a meta-analysis involving comparisons of EMDR against wait list controls, cognitive behavior therapy involving exposure, and treatment modalities described as other than CBT. Results indicated superiority of EMDR to the wait list control condition. Also, the authors found an overall superiority of EMDR compared to the other active treatment conditions, though they noted sufficient variability that they judged the summed results to indicate comparable vs. superior effectiveness of EMDR over other treatments.

Four studies specifically compared EMDR with Exposure Therapy (Lee et al., 2002; Power et al., 2002; Rothbaum, et al., 2005; and Taylor et al., 2003). Lee et al. (2002) and Power et al. (2002) found that EMDR had equivalent or better results than CBT and was more efficient in that it worked faster. Taylor et al. (2003) did not observe differential efficiency in their trial, but they also used therapist-assisted *in vivo* work plus imaginal work. Rothbaum, et al. (2005) found symptom improvement at post-test to be equivalent between EMDR and prolonged exposure. She writes in the abstract, "PE and EMDR did not differ significantly for change from baseline to either posttreatment or 6-month follow-up measurement on any quantitative scale." Although a measure termed "end-state functioning" was described as favoring PE, this was a composite variable derived from three of the individual clinical scales that were listed as primary outcomes, and it is likely that this variable had the effect of magnifying the small non-significant differences on these individual scales when they were combined.

Criticisms of EMDR stem from its theoretical premises to the necessity of its components to achieve the desired outcome. There is limited support provided by a set of seven studies that the inclusion of eye movement is beneficial, but most of these are studies with analog populations, or in clinical populations exposed to a traumatic event, but who didn't necessarily develop full clinical PTSD (Andrade et al.,

1997; Barrowcliff et al., 2004; Christman and Garvey, 2000; Kavanaugh et al., 2001; Kuiken et al., 2001-2002; Sharpley et al., 1996; Wilson, Silver, Covi, & Foster, 1996; and van den Hout et al., 2001). In aggregate, the data do not suggest that eye movements or other form of kinesthetic stimulation are necessary. Spates et al. (2009) reviews aptly the literature on dismantling studies in EMDR and concludes that “the best provisional conclusion so far is that the bilateral stimulation component of EMDR does not incrementally influence treatment outcome”. Notwithstanding the lack of necessity for eye movements, when viewed within the framework of all other trauma-focused CBTs, EMDR is equivalent.

There may be some basis for or against recommending this treatment depending upon the type of trauma leading to PTSD. Specifically, studies of EMDR efficacy with combat veterans have demonstrated variability, with several authors suggesting that the treatment may be less than optimal for this condition (Boudewyns et al., 1993; Jensen, 1994), and other studies suggesting the opposite (Carlson et al., 1998; Devilly et al., 1999). However, it should be noted that only two of the cited studies had a full course of treatment – all the others were short duration studies. Studies of other CBT modalities and SSRIs have also shown inconsistent results in combat veterans, and thus, based on current evidence, there is no reason to believe that EMDR would not be as effective as other trauma-focused CBTs in this population.

Overall, there are rigorously controlled studies to support the conclusion that EMDR is effective in the treatment for PTSD.

EVIDENCE TABLE

	Recommendation	Sources	LE	QE	R
1	EMDR is an effective treatment for PTSD (compared with wait-list, routine care, and active treatment controls)	Chemtob et al., 2000 Davidson & Parker, 2001 Maxfield & Hyer, 2002 Sheppard et al., 2000 Van der Kolk et al., 2007	I	Good	A
2	Eye movements are <i>not</i> critical to the effects of EMDR	Davidson & Parker, 2001 Spates et al., 2009	I	Fair	B
3.	EMDR compared with ET show consistent comparable results	Davidson & Parker, 2001 Foa & Meadows, 1997 Ironson et al., 2002 Lee et al., 2002 Power et al., 2002 Rothbaum et al., 2005 Servan-Schrieber, 2000 Sheppard et al., 2000 Taylor et al., 2003 Van Etten and Taylor, 1998	I	Good	A

LE=Level of Evidence QE=Quality of Evidence; SR= Strength of Recommendation (see Appendix A)

B5. Imagery Rehearsal Therapy (IRT)

Occurrence of nightmares as a problem is frequent (4 to 8 percent in the general population and 60 percent in PTSD). Evidence shows that nightmares are associated with psychological distress and sleep impairment. A conditioning pattern similar to classic psychophysiological insomnia is produced in the nightmare-disturbed loop, along with the negative cognition of “fear of going to sleep.” Studies using brief CBT (desensitization and imagery rehearsal) have demonstrated a large reduction in

nightmares. Many studies, including Forbes et al. (2001), suggest that PTSD is associated with a propensity toward image, particularly where the post-traumatic symptom picture is characterized by nightmares and flashbacks. IRT incorporates a system to increase the imagery control.

IRT is aimed at changing the content of the patient's nightmares to promote mastery over the content-threat, thereby altering the meaning, importance, and orientation to the nightmare. IRT includes elements of 1) psychoeducation about nightmares, insomnia, and PTSD; 2) positive coping skill building (thought stopping, breathing, grounding, writing/talking about issues and others); 3) cognitive restructuring; 4) sleep hygiene, stimulus control, and sleep restriction; and 5) focused use of pleasant imagery to replace negative imagery in recurrent nightmares. While discussion of trauma imagery occurs, the model includes a de-emphasis of discussion of this content in group sessions. The model has been tested primarily in a group format.

DISCUSSION

Several studies have examined IRT with some promising results. While not with a primary PTSD population, Krakow et al. (1995) studied 58 chronic nightmare sufferers who were randomly assigned to a treatment group (n = 39) or a wait list control group (n = 19). The IRT group demonstrated significant reductions in nightmares and improved sleep quality. Further, reduction in nightmares was a significant predictor of improvement in sleep. The authors concluded that for some chronic sufferers, nightmares may be conceptualized as a primary sleep disorder that can be effectively and inexpensively treated with CBT.

Krakow et al. (2001a) randomly assigned 168 female survivors of sexual assault (95 percent of the sample met the criteria for PTSD) to receive IRT (n = 88) or wait list (n = 80) and found that among completers, those women assigned to IRT had a larger reduction in self-reported PTSD severity at the 3-month follow-up than wait list. Further, the impact of nightmares was reduced and sleep quality improved. In a pilot study of IRT with crime survivors with PTSD, Krakow et al. (2001b) reported significant reductions in nightmares, improved sleep, and reduced PTSD severity at the 3-month follow-up.

Forbes et al. (2001) completed an open trial of group IRT with 12 Vietnam veterans with combat-related nightmares and PTSD. Veterans reported significant reduction in nightmare frequency and intensity for the target nightmare. In addition, self-reported PTSD symptoms were significantly reduced. Follow-up data demonstrated maintenance of gains at 12 months following the conclusion of treatment (Forbes et al., 2003).

A recent large RCT comparing IRT with a group nightmare management treatment (N=124) among Vietnam veterans with PTSD (receiving treatment in a VA clinical setting) found that neither treatment produced significant or sustainable improvement in overall PTSD symptom severity, nightmare frequency or sleep quality (Cook et al, 2010). While much of the research to date has focused on IRT, other versions of nightmare reduction programs, such as Emotional Relaxation and Rescripting, are under empirical examination.

EVIDENCE TABLE

	Recommendation	Sources	LE	QE	SR
1	IRT can be considered for treatment of PTSD (nightmare and sleep disruption, in particular)	Krakow et al., 1995, 2001a 2001b Forbes et al., 2001, 2003 Cook et al., 2010	I II-1 I	Fair	C

LE=Level of Evidence QE=Quality of Evidence; SR= Strength of Recommendation (see Appendix A)

B6. Psychodynamic Therapy

BACKGROUND

In 1895, Joseph Breuer and Sigmund Freud based their *Studies on Hysteria* on the proposition that traumatic life events can cause mental disorder (Breuer & Freud, 1955). This principle, radical for its time, grew in scope and application over the next century and strongly influenced military psychiatry in World War I (Kardiner, 1941; Rivers, 1918) and World War II (Grinker & Spiegel, 1945). Psychodynamic principles were later applied to the psychological problems of Holocaust survivors (Krystal, 1968; De Wind, 1984), Vietnam veterans (Lindy, 1996), rape survivors (Rose, 1991), adult survivors of childhood sexual trauma (Courtois, 1999; Roth & Batson, 1997; Shengold, 1989), and survivors of other traumatic events (Horowitz, 1997). Psychodynamic ideas have also helped providers manage the sometimes complex issues that may surface in the relationship between survivor and psychotherapist (Pearlman & Saakvitne, 1995; Wilson & Lindy, 1994). Psychodynamic psychotherapies operate on the assumption that addressing unconscious mental contents and conflicts (including those that may have been blocked from consciousness as part of a maladaptive response) can help survivors cope with the effects of psychological trauma. Psychological meanings of post-traumatic responses are explored by examination of the fears, fantasies, and defenses stirred up by the traumatic event.

DISCUSSION

Individual case reports comprise the bulk of the psychodynamic literature on the treatment of psychological trauma, but a small group of empirical investigations are available to support recommending that 2 psychodynamically informed treatments can be considered as treatment options for PTSD.

Three RCTs have supported the efficacy of Gersons's Brief Eclectic Psychotherapy for reducing PTSD symptoms in police (Gersons et al., 2000) and community patients with PTSD (Lindauer et al., 2005). This 16-week individual psychotherapy includes both CBT (e.g., psychoeducation, imaginal exposure, cognitive restructuring) and psychodynamic elements (focus on shame and guilt, attention to the patient-therapist relationship) and a farewell ritual at the end of treatment. At present, it is unclear which elements of treatment are responsible for the improved outcomes.

Brom and colleagues (1989) conducted a RCT that compared Horowitz's (1976) Brief Psychodynamic Therapy to hypnotherapy, trauma desensitization, and a wait list control group in the treatment of PTSD. They found that symptoms of intrusion and avoidance improved significantly in each of the treatment groups but not in the control group; no differences across the three treatments were observed.

While research evidence and clinical experience suggest that psychodynamic psychotherapy can be effectively combined with other forms of psychotherapy and with psychopharmacological interventions for depression (DiMascio et al., 1979; van Praag, 1989), this approach has not been sufficiently researched in work with PTSD.

Psychodynamic ideas have, in some instances, been misapplied in clinical work with trauma survivors, giving rise to concern about the creation or elaboration of so-called *false memories* (Roth & Friedman, 1997). It may be that trauma survivors are particularly prone to this phenomenon, given their tendency towards dissociation. It is important that clinicians be properly trained before undertaking psychodynamic treatment of trauma survivors.

Because of its focus on basic problems in interpersonal relationships, psychodynamic psychotherapy may be useful in working with patients with complex PTSD. Clinical case studies suggest that psychodynamic psychotherapy may be of particular value in work with adult survivors of childhood sexual abuse (Courtois, 1999; Roth & Batson, 1997; Shengold, 1989).

EVIDENCE TABLE

	Recommendation	Sources	LE	QE	SR
1	Some forms of psychodynamic psychotherapy can be considered for the treatment of PTSD	Brom et al., 1989 Gersons, Carlier, Lamberts, & van der Kolk, 2000 Lindauer et al., 2005	I	Fair	C
2	Psychodynamic psychotherapy for patients with co-morbidity	Courtois, 1999 Roth & Batson, 1997 Shengold, 1989	II-2	Fair	C

LE=Level of Evidence QE=Quality of Evidence; SR= Strength of Recommendation (see Appendix A)

B7. Patient Education

BACKGROUND

Education of the trauma survivor is a core part of all PTSD treatments. Survivors need to better understand what they are experiencing, how to cope with reactions or symptoms, and what happens in treatment. It is also helpful to provide this information to family members or to the patient's significant others so that they can more effectively support the patient's recovery.

DISCUSSION

PTSD education involves teaching the survivor to label, recognize, and understand PTSD symptoms (and other trauma-related problems) that he or she is experiencing, providing simple advice regarding coping, explaining what he or she can do to facilitate recovery, and describing treatment options. Education can help make symptoms more understandable and predictable, decrease fear of symptoms, increase awareness of coping options, and help survivors decide whether to seek treatment or learn how to better participate in treatment.

Education should be one of the first steps of PTSD treatment. It can help establish the credibility of the treatment provider, make treatment seem immediately helpful to the patient, and help prepare the patient for next steps in treatment. In fact, education should continue throughout PTSD treatment, sometimes in brief discussions when the patient has questions and sometimes more systematically as a formal helping activity. It can be delivered to individuals or to groups. Because those with PTSD often have difficulties with concentration and memory, repetition of educational information and provision of written information are important.

The content of PTSD-related education can include the following topics:

1. *Nature of PTSD symptoms:* It is often useful to help the survivor identify and label the reactions that he or she may be experiencing, recognize that emotional and physical reactions are very common (and not dangerous), and understand that anxiety and distress are often "triggered" by reminders of the traumatic experience, which can include sights, sounds, or smells associated with the trauma; physical sensations (e.g., heart pounding); or behaviors of other people. However, it is important to include comments on positive steps

that the individual is taking, if appropriate, rather than providing a long list of possible symptoms for review. Patients can also benefit in understanding how PTSD symptoms have their basis in adaptive survival responses to life-threatening events.

2. *Practical steps to cope with trauma-related problems:* Survivors can also be educated about ways of coping with their PTSD symptoms in order to minimize their impact on functioning and quality of life. While education about coping is not a substitute for more systematic coping skills training, simple information can also be useful. Survivors can be helped to distinguish between positive and negative coping actions. Positive coping includes actions that help to reduce anxiety, lessen other distressing reactions, and improve the situation: relaxation methods, exercise in moderation, talking to another person for support, positive distracting activities, and active participation in treatment. Negative coping methods may help to perpetuate problems and can include continual avoidance of thinking about the trauma, use of alcohol or drugs, social isolation, and aggressive or violent actions.
3. *Nature of the recovery process and PTSD treatment:* Survivors will sometimes have unrealistic or inaccurate expectations of recovery and may benefit from understanding that recovery is an ongoing daily gradual process (i.e., it does not happen through sudden insight or “cure”) and that healing does not mean forgetting about the trauma or having no emotional pain when thinking about it. Education about what happens in treatment is also important. This can help build motivation to participate or persist in treatment.

Despite the ubiquity of education in PTSD treatment and a strong clinical consensus as to the importance of such education, there is little evidence bearing on its impact on chronic PTSD. Education has usually been a component of empirically supported treatments, but it has not been carefully evaluated as a “stand-alone” treatment (nor is it intended to be delivered in the absence of other treatment elements).

Psychoeducation was one of several components in each study, and the effect of the psychoeducation component per se thus cannot be evaluated. There is, therefore, insufficient evidence to conclude that psychoeducation alone is an effective treatment for PTSD.

Three studies (Krupnick, 2008; Wallis, 2002; and Weine, 2008) compared group interventions containing a psychoeducation component with WL. There were 9, 12, and 16 sessions, and the sample sizes were 48, 83, and 166. Although each intervention contained a psychoeducational component, the focus and content of the group sessions differed across studies. In 2 studies, the group intervention decreased PTSD symptoms compared with WL, while in the third; PTSD symptoms were only evaluated as a mediator for effects on access to mental health services. No study included a control condition for the psychoeducation component.

EVIDENCE

	Recommendation	Sources	LE	QE	R
1	Psychoeducation is recommended as a component of PTSD treatment	Foa et al., 1999 Lubin et al., 1998 Krupnick et al., 2008 Wallis, 2002) Weine et al., 2008	III II-2	Poor Fair	C

LE=Level of Evidence QE=Quality of Evidence; SR= Strength of Recommendation (see Appendix A)

B8. Group Therapy

BACKGROUND

The most comprehensive critical review of group therapy approaches for the treatment of PTSD is Tracie Shea and colleagues' chapter within the second edition of the practice guideline *Effective Treatments for PTSD* (Shea, McDevitt-Murphy, Ready, & Schnurr, 2009). Shea et al.'s discussion builds upon the previous edition's chapter by David Foy and colleagues (Foy, Glynn, Schnurr, Jankowski, Wattenburg, Weiss, Marmar, & Gusman, 2000).

Shea and colleagues briefly review the use of group therapy for PTSD and note that there is no empirical support for the belief that group treatment is superior to individual treatment for trauma. The authors highlight potential benefits in Foy et al. (2000) of using a group format, including efficiency in treatment provision and development of support and understanding between group members that may counteract isolation and alienation. They also distinguish group treatment approaches by their emphasis on reintegration of the traumatic experience as an integral change process. Trauma-focused groups assume integration of the traumatic memory and modify the meaning of the trauma for the individual, while present-centered supportive approaches aim to decrease isolation and increase sense of competence. Shea et al. (2009) note that a focus on trauma may or may not be reflected within any one of the various theoretical orientations of therapy utilized in group approaches for PTSD, with the exception of supportive therapy, which tends to avoid direct focus on trauma material.

Shea et al. (2009) characterize three overarching group therapy orientations: Psychodynamic/Interpersonal/Process, Supportive, and Cognitive Behavioral. Most groups share common strategies designed to provide a sense of safety, trust, and develop cohesion among members. The three approaches do, however, differ in significant ways in terms of techniques and strategies used (See Table 1-5).

Foy and colleagues (2000) summarized factors identified in the literature as important considerations for group treatment in general, including:

- Flexibility in personal schedule
- Ability to establish interpersonal trust
- Prior group experience, including 12-step groups
- Completion of a preparatory course of individual therapy
- Similar traumatic experiences with other group members
- Compatibility for gender, ethnicity, and sexual orientation
- Willingness to abide by rules of group confidentiality
- Not severely paranoid or sociopathic
- Stable living arrangement

The value and necessity of these factors, however, have not been examined empirically. Although most studies of group treatment for PTSD do focus on a particular trauma type, the importance of homogeneity of groups in terms of trauma type is an unanswered question. Trial participants in studies reviewed herein commonly lacked previous individual or group therapy experience. Contraindications for group therapy and exclusion criteria for trials of group treatment are usually similar and include active psychosis, cognitive deficits, and current suicidal or homicidal risk (Shea et al., 2009).

Indications for Trauma Focus versus Supportive Groups (from Foy et al., 2000)

- Individual can tolerate high anxiety arousal or other strong affects
- No active suicidality or homicidality
- Substance abuse or other co-morbidities are under control
- Individual accepts rationale for trauma-uncovering work
- Willingness to self-disclose personal traumatic experiences
- No current life crises

Table 1 - 5 Group Therapy in PTSD (Shea et al., 2009)

Approach	Techniques/Strategies
Supportive groups (Present-focused)	- Aim to enhance daily functioning through provision of safety, trust, acceptance, and normalization of symptoms and experiences - Help individuals develop sense of mastery over problems via group feedback, emotional support and reinforcement of adaptive behaviors - Focus on current life issues rather than traumatic experiences
Psychodynamic/ Interpersonal Process (Trauma-focused)	- Facilitate insight-based learning and change - When an explicit focus on trauma is present, trauma material arises in a less structured manner or covertly, and emphasis is on increasing awareness of unconscious fears and maladaptive patterns - Emphasize understanding the meaning of the trauma symptoms - Help individuals gain insight and make connections into how current difficulties may be linked to the trauma - The Interpersonal Therapy (IPT) model helps groups members identify their specific relationship difficulties and behavioral patterns that promote poor functioning - "Process" groups maintain emphasis on the immediate present experience of the individual, their feelings and needs, and their interactions with other members
Cognitive-behavioral therapy groups (Trauma focused)	- Include psychoeducation on trauma and skills training to manage anxiety and arousal - Trauma is directly addressed via repeated imaginal exposure techniques in session and having individuals listen to audio recordings of their trauma experiences as homework between sessions - Maladaptive thoughts and beliefs are identified and modified or restructured - In final sessions, relapse prevention strategies are planned and coping skills reviewed

Although many of the studies of PTSD group treatment reviewed excluded participants with active substance use disorders (SUD), others did not and several specifically targeted co-morbid PTSD and SUD. How SUD affects PTSD outcomes in group treatment has not been examined. Shea et al. (2009) point out that vicarious traumatization is a concern within trauma-focused groups but that no published evidence exists indicating that negative effects occur for some members in trauma-focused group treatment as a result of vicarious traumatization and systematic investigation of this possibility has not occurred.

RATIONALE

The empirical literature on group treatment for PTSD has grown since the publication of the first edition of the Treatment Guidelines for PTSD, although there remain methodological weaknesses in study designs, and there is no empirical evidence to

support a conclusion that group treatment is superior to individual treatment for trauma.

Nonetheless, it does appear that group-based treatment for individuals diagnosed with PTSD is associated with improvements in symptoms of PTSD, and there is growing belief that some unique attributes of the group treatment format provide benefits that are superior to individual treatment for trauma. Identified benefits include efficiency in treatment provision and development of support and understanding between group members that may counteract isolation and alienation.

DISCUSSION

Summary of Studies:

In their review, Shea and colleagues (2009) included studies published beginning in 1998 that targeted populations with trauma, assessed symptoms of PTSD at pre- and posttreatment, and had at least 10 participants in the group therapy being studied. Citing the small number of existing controlled studies, they did not require that studies include only participants meeting criteria for PTSD. Our search for relevant studies began with a review of studies included in Shea et al. (2009) and was limited to studies in which the sample participants met DSM criteria for PTSD and the active treatment was solely or predominantly in group format. Of the total 22 studies in Shea et al. (2009), we reviewed 14 that met these criteria, including six randomized and two nonrandomized trials comparing at least one active treatment group to a comparison or control condition, and six studies reporting pre- to posttreatment effects of a single group treatment condition. Our review also included three studies not included in the Shea et al. (2009) chapter that provide additional information to consider when weighing the effectiveness of group therapy. Two were recently published and one of these focused on a Veteran sample (Beck, Coffey Foy, Keane, & Blanchard, 2009; Ready, Thomas, Worley, Backscheider, Harvey, Baltzell, et al., 2008). The third, although dated, was a randomized trial with a Veterans sample (Rogers, Silver, Goss, Obenchain, Willis, & Whitney, 1999). Fourteen of the total 17 studies examined cognitive-behavioral interventions; two examined interpersonal therapy, and one psychodynamic.

Summary of Randomized Trials:

Eight of the 17 studies reviewed used randomized designs. Of these eight, six examined cognitive-behavioral therapy (CBT) approaches. Only three of these six compared the active treatment to a comparison condition that was not a wait-list. Schnurr and colleagues (2003) investigated Trauma-Focused Group Therapy (TFGT) in male Veterans of the Vietnam War in the largest and most rigorous study to date of group therapy for PTSD (Schnurr, Friedman, Foy, Shea, Hsieh, Lavori, et al., 2003). TFGT incorporates group-based psychoeducation, coping skills training, imaginal exposure, cognitive challenging, and relapse prevention, with one-third of all sessions devoted to individual work (Foy, Ruzek, Glynn, Riney, & Gusman, 2002). Schnurr et al (2003) did not include individual sessions. TFGT was compared with present-centered group therapy (PCGT), an approach designed to provide the “nonspecific” factors of support and interpersonal connection inherent in group treatment. Both groups experienced significant modest-sized pre- to posttreatment improvement in PTSD, which were maintained at 12 months. The primary intention-to-treat (ITT) analyses did not find differences on PTSD or any other outcomes between the group conditions (Schnurr, 2003). Rogers and colleagues (1999) compared a single group session of flooding-based exposure therapy with a single group session of eye movement desensitization and reprocessing (EMDR) in 12 Vietnam War Veterans who were undergoing inpatient treatment for combat-related

PTSD. There were no differences between groups on PTSD symptoms posttreatment, with both groups showing significant improvements. Lastly, Beck and colleagues (Beck et al., 2009) randomized 44 individuals with PTSD related to motor vehicle accidents (MVAs) to either Group Cognitive Behavior Therapy (GCBT) or a minimal contact comparison condition. The GCBT was a 14-week treatment adaptation of individual CBT to a group setting. At posttreatment, GCBT resulted in significantly greater reductions in PTSD symptoms among treatment completers, with large between group effect sizes and stability of gains at 3-months. Significantly more patients in GCBT (88.3 percent) versus in MCC (31.3 percent) no longer met criteria for PTSD at posttreatment.

Three of the trials, comparing CBT to a wait-list (WL) control, involved female populations. Imagery Rehearsal Therapy (IRT) resulted in significantly more improvement in PTSD, nightmares, and sleep, with large between-group effects on the CAPS and PTSD Symptom Scale (PSS) and improvements maintained at 6 months (Krakow, Hollifield, Johnston, Koss, et al., 2001a; Krakow, Hollifield, Scharader, et al., 2000). Large effects were also found on PTSD symptoms between an affect management group and WL control where both groups also received individual therapy and medication (Zlotnick, et al., 1997). A trial of women with PTSD related to diverse traumas, as well as co-morbid panic disorder, indicated that multichannel exposure therapy was superior to control (Falsetti et al., 2005).

Two small-scale randomized trials evaluated non-CBT approaches versus wait-list controls in women with PTSD related to sexual abuse. Comparison of a trauma-focused group and a present-focused group, both based on psychodynamic principles, showed no differences for either relative to a wait-list control (Spiegel, Classen, Thurston, & Butler, 2004) and even when combined, the composite treatment group showed significantly more improvement only on non-PTSD measures (Classen, Koopman, Nevill-Manning, & Spiegel, 2001). In contrast, Krupnick and colleagues (Krupnick, Green, Miranda, & Stockton, 2008) found significant effects with ITT analyses for Interpersonal Therapy group on PTSD, depression, and interpersonal functioning, with a medium-to-large effect for PTSD.

Caveat regarding analysis of data from group-administered treatments:

In examining the effects of these group treatments, a significant and prevalent methodological limitation warrants discussion. This limitation is that most studies failed to use analytic strategies to account for clustering of observations within treatment groups. Participants administered treatment in group format share a common therapy environment, which may homogenize response to the treatment. As explained by Baldwin and colleagues (Baldwin, Murray, & Shadish, 2005), studies that do not take into account the magnitude of the dependency among observations taken on members of the same group, or intraclass correlation (ICC), underestimate the standard error of the treatment effect by pooling the effect of the group with the effect of the treatment, so that even if treatment has no effect, an incorrect analysis can suggest a treatment effect.

Out of the 17 studies reviewed herein, only two studies corrected for unit of analysis and group ICC (Beck et al., 2009; Schnurr et al., 2003) and two studies accounted for ICC (Creamer et al., 2006; Ready et al., 2008) in analyses, with the remaining studies taking typical approach of treating the individual participants as the unit of analyses and not correcting for the ICC. It is likely that true effects for group treatments for PTSD are more modest than published effects.

Conclusions:

The empirical literature on group treatment for PTSD has grown since the publication of the first edition of the Treatment Guidelines for PTSD. However, most studies continue to utilize small sample sizes, use wait-list controls, and fail to account for clustering of observations in analyses. Advances in methodological rigor are typified within studies by Schnurr and colleagues (2003), as well as Beck and colleagues (2009). Field tests of interventions developed as part of clinical practice and evaluated on large samples, such as those by Creamer et al. (2006) and Ready et al. (2008), offer unique information yet pose numerous questions regarding complex multi-phase approaches.

With these caveats in mind, our review suggests that, overall, group-based treatment for individuals diagnosed with PTSD is associated with improvements in symptoms of PTSD. Reported pre- to post-treatment effect sizes range from small to large, but likely overestimate the true effect of the treatment. The amount of change exceeded that of wait-list controls for most studies. Psychodynamic treatment evidenced the weakest within-group effects (Classen et al., 2004). Interpersonal therapy evidenced small to large effects (Cloitre & Koenen, 2001; Krupnick et al., 2008). Significant support exists for cognitive-behavioral approaches, for both combat veterans and in adults with histories of abuse, with effects ranging from small to very large.

As noted above, few studies have directly compared different forms of group therapy. The two that have, indicated equal benefit from trauma-focused and present-centered supportive therapies in the primary analyses (Classen et al., 2004; Schnurr et al., 2003). Relatedly, it remains unknown whether improvements found in most studies of cognitive-behavioral or interpersonal/process-oriented treatments are due to the strategies employed. Shea and colleagues' (2009) examination of within-group effect sizes pre to posttreatment found no evidence that groups focusing on trauma provide superior outcomes than those who do not. Only one trial examined a group adaptation of an existing and proven individual therapy protocol (Beck et al., 2009). Reductions in PTSD from GCBT were comparable to those obtained in previous studies of individual CBT but GCBT did not reduce co-morbid anxiety and depression.

EVIDENCE TABLE

	Recommendation	Sources	LE	QE	SR
1	Consider group treatment for patients with PTSD	Beck et al., 2009 ① Classen et al., 2001; ① Cloitre & Koenen, 2001 Cook et al., 2006 Creamer et al., 2006 - Donovan et al., 2001 - Falsetti et al., 2005 ① Krakow et al., 2000, 2001 ① Krupnick et al., 2008 ① Lublin et al., 1998 Najavits et al., 1998 Ready et al., 2008 - Resick & Schniske, 1992 Rogers et al., 1999 ① Schnurr et al., 2003 v① Spiegel et al., 2004①	I II	Fair- Poor	C

		Zlotnick et al., 1997●; 2003			
2	Current findings do not favor trauma-focused versus present-focused group therapy	Schnurr et al., 2003 Classen et al., 2004 Shea et al., 2009	I	Good	I

LE=Level of Evidence QE=Quality of Evidence; SR= Strength of Recommendation (see Appendix A); ●-RCT

B9. Dialectical Behavior Therapy

BACKGROUND

Dialectical behavior therapy (DBT) is a comprehensive cognitive-behavioral treatment for complex, difficult-to-treat mental disorders, specifically designed to treat chronically suicidal individuals and patients with multi-disorders or borderline personality disorder (BPD).

DBT has since been adapted for other seemingly intractable behavioral disorders involving emotion dysregulation, including substance dependence in individuals with BD and binge eating, to other clinical populations (e.g., depressed, suicidal adolescents) and in a variety of settings (e.g., inpatient, partial hospitalization, forensic).

While considerable evidence supports the use of exposure-based treatment for PTSD, its utilization may pose some problems for patients where the symptoms of PTSD are complicated. High rates of attrition, suicidality, dissociation, destructive impulsivity, and chaotic life problems are reasons cited by clinicians for abandoning empirically supported exposure treatment. Some practitioners have suggested that the approach of DBT, designed to address many of these issues, offers useful strategies for addressing the needs of patients considered poor candidates for exposure therapy.

The DBT approach incorporates what is valuable from other forms of therapy and is based on a clear acknowledgement of the value of a strong relationship between therapist and patient. Therapy is structured in stages, and at each stage a clear hierarchy of targets is defined. The techniques used in DBT are extensive and varied, addressing essentially every aspect of therapy. These techniques are underpinned by a dialectical philosophy that recommends a balanced, flexible, and systemic approach to the work of therapy. Patients are helped to understand their problem behaviors and then deal with situations more effectively. They are taught the necessary skills to enable them to do so and helped to deal with any problems that they may have in applying those skills. Advice and support are available between sessions. The patient is encouraged and helped to take responsibility for dealing with life's challenges.

DISCUSSION

Although DBT is becoming more common as a technique for treating patients with BPD, no clinical trials have been reported in the literature for the use of DBT in patients with PTSD. The following studies concern patients with BPD who attempted some form of self-injury; however, for patients with PTSD and co-morbid BPD, these studies may be applicable to the treatment decision process.

In a meta-analysis of RCTs of “psychosocial and/or psychopharmacological treatment versus standard or less intensive types of aftercare” for patients who had shown self-harm behaviors, Hawton et al. (2000) compared DBT versus standard aftercare and found that DBT significantly reduced rates of further self-harm (0.24; 0.06 to 0.93). The authors caution, however, that “there still remains considerable uncertainty

about which forms of psychosocial and physical treatments of self-harm patients are most effective.”

Verheul et al. (2003) reported on the effectiveness of DBT in a group of 58 female BPD patients. For these women, DBT therapy “resulted in better retention rates and greater reductions of self-mutilating and self-damaging impulsive behaviors compared with usual treatment, especially among those with a history of frequent self-mutilation” (Verheul et al., 2003). In the same study group, van den Bosch et al. (2002) compared the results of therapy in women with and without co-morbid substance abuse. They found that co-morbid substance abuse did not dilute the effect of the DBT but that the DBT therapy had no effect on the women’s substance problems. Evans et al. (1999) compared the provision of self-help booklets alone to six sessions of cognitive therapy linked to the booklets, which contained elements of DBT (MACT), in 34 patients who had attempted self-harm. The authors reported that MACT therapy led to a lowering of the number of suicidal acts per month and also improved self-rated depressive symptoms.

Linehan and colleagues (1993) conducted a RCT of 39 women with BPD who were randomly assigned to DBT or usual care for one year, then followed up at six and twelve months following treatment. The authors reported that DBT patients had significantly less parasuicidal behavior, less anger, and better self-reported social adjustment during the initial 6 months and significantly fewer psychiatric inpatient days and better interviewer-rated social adjustment during the final 6 months.

Telch et al. (2001) and Safer et al. (2001) expanded the DBT concept to treatment of women with binge eating disorders. In both studies, women were randomly assigned to DBT or a wait list (Telch study – 44 women; Safer study – 31 women), and the authors’ results were similar; patients improved significantly in reduction of binge/purge behaviors but did not differ on any secondary measures.

Bohus et al. (2000) treated 24 female chronically suicidal patients with DBT and found significant improvements in ratings of depression, dissociation, anxiety, and global stress and a highly significant decrease in the number of parasuicidal acts.

Gould et al. (2003) and Miller and Glinski (2000) identify DBT as a promising treatment for suicide; however, they acknowledge the need for RCTs. In their overview of the use of DBT, Koerner and Linehan (2000) also stress the need for longitudinal studies to determine suicide rates and maintenance of treatment gains.

EVIDENCE TABLE

	Evidence	Sources	QE	QE	R
1	DBT for patients with a borderline personality disorder typified by parasuicidal behaviors	Evans et al., 1999 Hawton et al., 2000 Linehan et al., 1993 Safer et al., 2001 Telch et al., 2001 van den Bosch et al., 2002 Verheul et al., 2003	I	Fair	B

LE=Level of Evidence QE=Quality of Evidence; SR= Strength of Recommendation (see Appendix A)

B10. Hypnosis

BACKGROUND

Hypnosis is not held to be an ASD or PTSD therapy per se but may significantly enhance the effectiveness of other therapies in their treatment or in the management of a variety of related clinical conditions (Kirsch et al., 1998; Spiegel & Spiegel, 1987). Historically, hypnotic treatments have played a role in the management of shell shock, battle fatigue, and traumatic neuroses.

Hypnosis is defined by the APA as “a procedure during which a health professional or researcher suggests that a client, patient, or subject experience changes in sensations, perceptions, thought, or behavior. The hypnotic context is generally established by an induction procedure” (Kirsch, 1994). An induction procedure typically entails instructions to disregard extraneous concerns and focus on the experiences and behaviors that the therapist suggests or that may arise spontaneously.

Hypnosis should only be used by credentialed healthcare professionals who are properly trained in the clinical use of hypnosis and are working within the areas of their professional expertise.

DISCUSSION

Most of the case studies that have reported that hypnosis is useful in treating post-trauma disturbances following a variety of traumas lack methodological rigor, and therefore strong conclusions about the efficacy of hypnosis to treat PTSD cannot be drawn (Rothbaum, 2001).

Brom and colleagues (1989), in a RCT, showed that hypnosis and desensitization significantly decreased intrusive symptoms, whereas psychodynamic therapy was useful for reducing avoidance symptoms in patients with various types of post-traumatic symptomatology. In a meta-analysis, Sherman (1998) compared the effects of the Brom et al. trial with those of other controlled studies and found that the major advantage of using hypnosis may appear at long-term follow-up rather than at the end of treatment: this is consistent with meta-analyses of hypnosis for conditions other than PTSD (Kirsch et al., 1999).

Various studies, including meta-analyses, of the treatment of anxiety, pain, repetitive nightmares, and other conditions often associated with PTSD imply that hypnosis can substantially reduce the severity of these problems (Daly & Wulff, 1987; Jiranek, 1993; Kirsch et al., 1995; Eichelman, 1985; Kingsbury, 1993) and enhance the effectiveness of psychodynamic and cognitive behavioral therapy (Kirsch, 1996; Kirsch et al., 1999; Smith et al., 1980). Most of the literature on the use of hypnosis for PTSD is based on service and case studies.

Shakibaei (2008) reported that hypnotherapy helped reduce both pain and re-experiencing of traumatic events among burn patients in a randomized control trial, but it should be noted that patients meeting criteria for any acute psychiatric disorder were specifically excluded from this study.

Abramowitz (2008) reports on a RCT in which hypnotherapy was compared to zolpidem treatment for insomnia among 32 patients with combat PTSD who were also suffering from insomnia. All patients were already taking an SSRI. He found significant improvement in PTSD symptoms and sleep quality, number of awakenings, ability to concentrate in the morning, and morning sleepiness in the hypnotherapy group. Sleep time improved equally in both groups.

There are a number of indications for using hypnosis in the treatment of PTSD:

1. Hypnotic techniques may be especially valuable as an adjunctive treatment for symptoms often associated with PTSD, including dissociation, anxiety, pain, nightmares, and insomnia.
2. PTSD patients who manifest at least moderate hypnotizability may benefit from the addition of hypnotic techniques to their treatment.
3. Because confronting traumatic memories may be very difficult for some PTSD patients, hypnotic techniques may provide them with a means to modulate their emotional and cognitive distance from such memories as they are worked through therapeutically.

There are a number of contraindications for using traditional hypnotic techniques in the treatment of PTSD:

1. In the rare cases of individuals who are refractory or minimally responsive to suggestion, hypnotic techniques may not be the best choice, because there is some evidence that hypnotizability is related to treatment outcome efficacy (Levitt, 1994; Spiegel et al., 1981 & 1993).
2. Some PTSD patients may be resistant to hypnotic treatment because of religious concerns or other beliefs. If resistance persists, other suggestive techniques may be tried, including emotional self-regulation therapy (ESRT), which is done with open eyes and uses sensory recall exercises rather than a hypnotic induction (Bayot et al., 1997; Kirsch et al., 1999).
3. For patients who have low blood pressure or are prone to falling asleep, hypnotic procedures, such as “alert hand,” which emphasize alertness and activity rather than relaxation, may be substituted (Cardena et al., 1998).

EVIDENCE

	Recommendation	Sources	LE	QE	R
1	Hypnosis may be used to alleviate PTSD symptoms	Brom et al., 1989 Sherman, 1998 Shakibaei et al., 2008 Abramowitz et al., 2008	I	Fair-Poor	C

LE=Level of Evidence QE=Quality of Evidence; SR= Strength of Recommendation (see Appendix A)

B11. Behavioral Couples Therapy

BACKGROUND

Perceived social support has been identified as an important resilience factor in PTSD. Families report significant distress during the deployment cycle and high prevalence of family problems, such as divorce. A number of family and couples interventions have been developed, including Behavioral Family Therapy (BFT), Cognitive-Behavioral Couples Therapy (CBCT), and Support and Family Education (SAFE). However, there is as yet little support for these interventions as a first-line treatment for PTSD.

DISCUSSION

Glynn et al. (1999) conducted a RCT of couples or family treatment for PTSD, utilizing either an Exposure condition, Exposure followed by BFT, or a wait list control. While both active treatment conditions improved on PTSD symptoms, BFT did not significantly improve the PTSD symptoms, compared to the Exposure-only condition. However, BFT did demonstrate improved problem solving skills relative to the other two conditions.

Monson et al. (2004, 2005) conducted a small, uncontrolled pilot study of seven couples who received CBCT for PTSD. Significant improvements were found on PTSD, depression, and anxiety for both veterans and wives. The improvement in relationship satisfaction was more mixed, with no improvement for husbands but greater improvement for wives.

Devilly (2002) examined a Lifestyle Management course for male veterans with PTSD and their partners in a weeklong residential treatment. Both veterans and their partners experienced significant reductions in anxiety, depression, and stress; veterans also experienced significant reductions in PTSD. However, the effect size of these changes was small, and symptom improvements were considered to be of limited clinical importance.

No studies that evaluated behavioral couples therapy (BCT) for treatment of post-traumatic stress disorder (PTSD) were identified. One study (Rotunda et al., 2008) evaluated BCT for substance use disorder (SUD) in veterans with co-morbid PTSD. The study was not designed to evaluate BCT for treatment of PTSD but did assess psychological symptoms as a function of BCT. Although the effects of BCT on PTSD symptoms specifically were not reported, the results suggested that BCT may reduce general psychological distress and increase abstinence in male veterans with SUD and co-morbid PTSD. However, caution should be taken in generalizing these findings to a population with PTSD alone, given the body of literature demonstrating that those with co-morbid SUD and PTSD are different from those with PTSD alone on a number of important clinical variables (e.g., symptom severity, chronicity of illness, treatment refractory).

No review or meta-analysis publications that addressed BCT, BFT, or CBCT as a treatment for PTSD were identified.

EVIDENCE TABLE

	Evidence	Sources of Evidence	LE	QE	SR
1	BFT did not significantly improve the PTSD symptoms and was inferior to other psychotherapies	Glynn et al.,1999 Monson et al.,2004 Devilly et al.,, 2002	I	Fair - Poor	I

LE=Level of Evidence QE=Quality of Evidence; SR= Strength of Recommendation (see Appendix A)

B12. Telemedicine and Web-based Interventions

B12-1. TELEMEDICINE INTERVENTIONS

BACKGROUND

Increasingly, a range of technologies are being adapted to enhance delivery of mental health services. Such technologies include the telephone and videoconferencing tools. Some technological applications assist human providers in delivering their treatments to patients, as when videoconferences or telephones are used to reach those for whom attendance may be difficult, or increasing convenience for patients by eliminating travel to face-to-face sessions. Telephone-based services – phone-based counseling, automated telephone assessment, and interactive telephone applications – provide ways of extending assessment and treatment into the natural environment.

DISCUSSION

A burgeoning body of rigorous research has demonstrated that psychotherapy for treatment of depression and anxiety disorders, delivered either via

videoteleconferencing (VTC) or via telephone, is not only effective but clinically equivalent to face-to-face delivery (O'Reilley et al., 2007; Bee et al., 2008). However, only one study to date has conducted that level of rigorous examination of psychotherapy delivered to a PTSD population via VTC (Morland et al., 2009). This study found that Anger Management Group therapy via VTC was as *effective* as face-to-face delivery in reducing anger symptoms in PTSD patients, both immediately post-treatment and in short-term follow-up (i.e., 3 months). It also found that there were no significant differences between the two modalities in satisfaction with treatment, treatment credibility, attendance, homework completion, attrition, or alliance among group members (Morland et al., 2009). However, patients receiving treatment via VTC had lower therapeutic alliance with the group leader than those who received face-to-face delivery.

Additional trials of VTC delivery of PTSD-specific treatments have also demonstrated clinical effectiveness that was comparable to face-to-face delivery (e.g., Frueh et al., 2007). However, due to the methodologies used (e.g., small sample size, non-randomized), they were not able to test if VTC was actually equivalent to face-to-face treatment. A non-random cohort study demonstrated that CBT delivered via VTC improved PTSD symptoms at a level similar to face-to-face group delivery (Germain, Marchand, Bouchard, Drouin, & Guay, 2009). A recent pilot study found that Prolonged Exposure Therapy delivered via VTC was highly effective, safe, and feasible (Tuerk et al., 2010).

There has been somewhat inconsistent evidence of process outcomes, such as patient and provider satisfaction, patient treatment preference, comfort talking to their therapists, and homework compliance, among the different trials comparing VTC and face-to-face delivery of PTSD interventions. Although several studies have found no significant differences between the two modalities, some have found that in-person delivery has generated slightly better process outcomes (Morland, Pierce, & Wong, 2004; Frueh et al., 2007).

The effectiveness of telephone delivery of case management and support has been well proven for a wide variety of behavioral health interventions. However, it is much less studied with PTSD patients. A small cohort study demonstrated that telephone-based monitoring and support improved patient satisfaction and entry into aftercare compared to the treatment-as-usual condition (Rosen et al., 2006).

Mobile phone-based interventions present several advantages and capabilities (e.g., web-browsing, text messaging, software applications, etc.) that could address common problems in delivering evidence-based treatments (Boschen, 2010); however, the evidence to support these technologies in the PTSD interventions has yet to be generated.

In summary, telephone delivery and videoconferencing can be effectively used to overcome geographical barriers to mental healthcare. There is an abundance of evidence that the modalities are safe and effective. There is preliminary evidence to suggest that psychotherapy delivered via these modalities is as effective as face-to-face care. As the field develops, additional research needs to examine how TMH modalities affect the therapeutic process and also how mobile phone-based interventions can be effectively used for PTSD treatment.

EVIDENCE TABLE

	Evidence	Sources of Evidence	LE	QE	SR
1	Telephone delivery and videoconferencing can be effectively used to deliver psychotherapy	O'Reilley et al., 2007 Bee et al., 2008 Morland et al., 2009 Greene et al., 2010 Germain et al., 2009	I I I I II-1	Mod	C

LE=Level of Evidence QE=Quality of Evidence; SR= Strength of Recommendation (see Appendix A)

B12-2. WEB-BASED INTERVENTIONS

BACKGROUND

Increasingly, a range of computer and Internet technologies are being adapted to enhance delivery of mental health services. Web-based applications can deliver elements of treatment (such as psychoeducation or skills training) in the absence of provider contact or with reduced contact, and it is possible that access to help via technologies may increase engagement in care by reducing the stigma associated with treatment-seeking and increasing accessibility of care (e.g., for rural populations, disabled persons, individuals without easy transportation access). To date, research conducted with PTSD patients has been very limited, but services are increasingly being delivered via these technologies. Newly developed technologies can present significant challenges related to patient confidentiality and safety, and they must be addressed carefully by both the individual providers and the organization delivering these interventions.

DISCUSSION

Web-based interventions have very limited research for treatment of PTSD, although several studies have been done to assess these techniques particularly in traumatized individuals with general distress or subclinical PTSD symptoms. Web-based interventions may provide an effective delivery modality for CBT techniques that can be considered in certain circumstances. However, these interventions raise a number of privacy and confidentiality issues and have not been directly compared with other evidence-based person-to-person CBT modalities that have been shown to be efficacious.

The Internet provides a potential resource for delivery of both information (psychoeducation) and more complex interventions. At present, while there is much traumatic stress-related information available on the Web, the accuracy and authoritativeness of the information can be difficult for consumers to determine. Bremner, Quinn, Quinn, and Veledar (2006) reviewed the quality of 80 websites related to psychological aspects of trauma and found that 42 percent of sites had inaccurate information, 82 percent did not provide a source of content, and 41percent did not use a mental health professional in the development of the content. The authors concluded that although abundant, websites providing information about traumatic stress are often not useful and can sometimes provide inaccurate and potentially harmful information to consumers of medical information.

Despite these concerns, prominent authoritative websites that are grounded in research on psychological trauma and PTSD do exist, and many public organizations and universities have developed online information resources related to post-traumatic stress (e.g., National Center for PTSD site: www.ncptsd.va.gov; Center for the Study of Traumatic Stress, <http://www.centerforthestudyoftraumaticstress.org/>;

International Society for Traumatic Stress Studies, www.istss.org; National Institute of Mental Health, <http://www.nimh.nih.gov/health/topics/post-traumatic-stress-disorder-ptsd/index.shtml>).

Patients and family members should be warned that information about PTSD that is obtained from the Internet should be interpreted with caution. Internet sites from established healthcare agencies or patient advocacy organizations are recommended over chat rooms or non-specialist or commercial sites.

Several randomized controlled trials (RCTs) of web-based intervention treatment of PTSD have been conducted. Taken together, they provide preliminary support for the use of specific web-based CBT approaches. RCTs of web-based therapist-assisted interventions (Knaevelsrud & Maercker, 2007; Lange, et al., 2001; Lange et al., 2003; Litz, Engel, Bryant, & Papa, 2007) have demonstrated significant improvements in trauma-related symptoms compared to wait list and supportive counseling control conditions, with improvements being maintained over short-term (i.e., 3-month) follow-up periods. The studies have focused largely on traumatized individuals (clinical and non-clinical, such as university students) with generalized distress or subclinical PTSD symptoms. Only one of the RCTs selected patients based on a PTSD diagnosis. This study involved service members with PTSD related to the Pentagon attack of September 11, 2001 or combat in Iraq or Afghanistan (OEF & OIF) (Litz et al., 2007). However, the definition of PTSD was not based on a standard structured clinical interview, and no difference was found in the intent-to-treat analysis between the internet-based CBT and internet-based supportive therapy control. In addition, this was not a pure internet-based intervention, as it involved a 2-hour initial face-to-face session in addition to periodic telephone contact. A meta-analysis of Internet interventions for anxiety (Reger & Gahm, 2009) found that the effect sizes for PTSD symptoms fell in a large range ($ES = .75$; $CI = .49$ to 1.01), but again, this was not based on studies of patients with PTSD per se but rather persons who have sustained trauma and who have distress, subclinical PTSD, or, in some cases, actual PTSD. Reger and Gahm (2009) also noted many methodological problems with current studies and indicated that additional research is needed to determine evidence for effectiveness.

In conclusion, there is insufficient evidence to recommend web-based interventions for treatment of PTSD. The use of the Internet may have relevance as adjunctive modalities in assisting distressed traumatized individuals and complementing other evidence-based treatment interventions.

As with face-to-face treatments, it is important to recognize that existing studies have looked at the effectiveness of specific web-based protocols. Thus, it cannot be inferred that the studied modalities are generalizable to other web-based treatments. Three of the studies cited above relate to one intervention, entitled Interapy (Lange, et al., 2001; Lange et al., 2003; Knaevelsrud & Maercker, 2007). Interapy and DeStress (Litz et al., 2007) share several intervention components, including repeated writing about the traumatic experience. These evidence-supported web-based protocols are also therapist-assisted, with significant input from the provider. For example, Interapy involves a mean per-patient total of 14 hours of therapist time. Evidence from research on other mental health problems indicates that rates of attrition from web-based interventions are high in the absence of provider contact to facilitate completion. With regard to PTSD, there is relatively little evidence at present for the effectiveness of Internet interventions that are completely self-administered (e.g., Hirai & Clum, 2005).

Regardless of intervention mode, it is important that those involved in technology-assisted intervention delivery take steps to ensure that their work complies with the regulations and procedures of the organization in which they are employed, with evolving legal standards, and with the ethical standards of their professions. Newly developed technologies can present significant challenges related to patient confidentiality and safety, and these must be addressed carefully by both the individual providers and the organization delivering these interventions.

EVIDENCE TABLE

	Evidence	Sources of Evidence	LE	QE	SR
1	Insufficient evidence to recommend web-based interventions for treatment of PTSD	Knauvelsrud & Maercker, 2007 Lange, et al., 2001 Lange et al., 2003 Litz, et al., 2007	I I I I	Poor Poor Poor Good	I

LE=Level of Evidence QE=Quality of Evidence; SR= Strength of Recommendation (see Appendix A)

C. PHARMACOTHERAPY FOR PTSD

There is growing evidence that PTSD is characterized by specific psychobiological dysfunctions, which have contributed to a growing interest in the use of medications to treat trauma-related biological effects (see Table I-6).

Studies of medication classes used in therapy for PTSD in individuals exposed to trauma that assessed clinical outcomes were included in the review for this guideline update. Evidence from randomized controlled trials (RCTs) was considered to be of highest quality, followed by observational evidence. Other sources were evaluated when randomized controlled trials and observational studies were not available or did not provide adequate evidence. Studies were excluded if they did not evaluate response to pharmacotherapy and if they did not evaluate individuals exposed to trauma. The recommendations and tables address only drugs that have been studied in RCTs and are available in the U.S. Other drugs that have not been reported in published studies or were tested in open-label trials have not been considered and therefore do not appear in the table (see **Table I - 6**).

Table I - 6 Pharmacotherapy Interventions for Treatment of PTSD

Effect = Balance of Benefit and Harm				
SR	Significant	Some Benefit	Unknown	No Benefit
A	SSRIs SNRIs		-	-
B	-	Mirtazapine Prazosin (for sleep/nightmares) TCAs Nefazodone [Caution]* MAOIs (phenelzine) [Caution]*	-	-
C			Prazosin (for global PTSD)	
D	-	-	-	Benzodiazepines [Harm] Tiagabine Guanfacine Valproate Topiramate Risperidone
I	-	-	Atypical antipsychotic (Except risperidone, as adjunct) Atypical antipsychotic (monotherapy) Conventional antipsychotics Buspirone Non-benzodiazepine hypnotics Bupropion Trazodone (adjunctive) Gabapentin Lamotrigine Propranolol Clonidine	-

SR = Strength of recommendation (see Appendix A); * Attention to drug to-drug and dietary interactions

RECOMMENDATIONS

General Recommendations:

1. Risks and benefits of long-term pharmacotherapy should be discussed prior to starting medication and should be a continued discussion item during treatment.
2. Monotherapy therapeutic trial should be optimized before proceeding to subsequent strategies by monitoring outcomes, maximizing dosage (medication or psychotherapy), and allowing sufficient response time (for at least 8 weeks). [C]
3. If there is some response and patient is tolerating the drug, continue for at least another 4 weeks.
4. If the drug is not tolerated, discontinue the current agent and switch to another effective medication.
5. If no improvement is observed at 8 weeks consider:
 - a. Increasing the dose of the initial drug to maximum tolerated
 - b. Discontinuing the current agent and switching to another effective medication
6. Recommend assessment of adherence to medication at each visit.
7. Recommend assessment of side effects and management to minimize or alleviate adverse effects.
8. Assess for treatment burden (e.g., medication adverse effects, attending appointments) after initiating or changing treatment when the patient is non-adherent to treatment or when the patient is not responding to treatment.
9. Since PTSD is a chronic disorder, responders to pharmacotherapy may need to continue medication indefinitely; however, it is recommended that maintenance treatment should be periodically reassessed.
10. Providers should give simple educational messages regarding antidepressant use (e.g., take daily, understand gradual nature of benefits, continue even when feeling better, medication may cause some transient side effects, along with specific instructions on how to address issues or concerns, and when to contact the provider) in order to increase adherence to treatment in the acute phase. [B]

Monotherapy:

11. Strongly recommend that patients diagnosed with PTSD should be offered selective serotonin reuptake inhibitors (SSRIs), for which fluoxetine, paroxetine, or sertraline have the strongest support, or serotonin norepinephrine reuptake inhibitors (SNRIs), for which venlafaxine has the strongest support, for the treatment of PTSD. [A]
12. Recommend mirtazapine, nefazodone, tricyclic antidepressants (TCAs), amitriptyline and imipramine, or monoamine oxidase inhibitors (phenelzine) for the treatments for PTSD. [B]
13. Recommend against the use of guanfacine, anticonvulsants (tiagabine, topiramate, or valproate) as monotherapy in the management of PTSD. [D]

14. The existing evidence does not support the use of bupropion, buspirone, and trazodone, anticonvulsants (lamotrigine or gabapentin) or atypical antipsychotics as monotherapy in the management of PTSD. [I]
15. There is evidence against the use of benzodiazepines in the management of PTSD. [D]
16. There is insufficient evidence to support the use of prazosin as monotherapy in the management of PTSD. [I]

Augmented Therapy for PTSD:

17. Recommend against the use of risperidone as adjunctive therapy [D]. There is insufficient evidence to recommend the use of any other atypical antipsychotic for treatment of PTSD. [I]
18. Recommend adjunctive treatment with prazosin for sleep/nightmares. [B]
19. There is insufficient evidence to recommend a sympatholytic or an anticonvulsant as an adjunctive therapy for the treatment of PTSD. [I]

DISCUSSION***Treatment of PTSD Core Symptoms***

The published pharmaceutical randomized clinical controlled trials (RCTs), which target chronic PTSD symptoms, include drugs of the following drug classes: antidepressants, (e.g., SSRIs, monoamine oxidase inhibitors, tricyclics, as well as atypical antipsychotics), anticonvulsants, benzodiazepines, alpha-adrenergic blockers, and others such as d-cycloserine.

Antidepressants

Antidepressants, particularly serotonergic reuptake inhibitors (SSRIs), have proven to be effective in treating PTSD and are recommended as first-line agents in treatment guidelines (Davidson et al., 2001; Brady et al., 2000; Foa et al., 2000; Foa et al., 1999). Over 3000 patients have participated in studies of paroxetine, sertraline, and fluoxetine. Sertraline and paroxetine have FDA approval for PTSD. SSRIs have a broad spectrum of action, effectively reducing all three core symptoms of PTSD. As a class, they are generally well tolerated.

The Cochrane Collaboration published a review of the evidence regarding pharmacological treatments in PTSD (Stein et al., 2006). They found 35 short-term RCTs of PTSD (4597 participants) to review, three of which contained a maintenance component; five of those were unpublished. The authors concluded that while no clear evidence exists to show that any particular class of medication is more effective or better tolerated than any other, the greatest number of trials showing efficacy to date, as well as the largest, has been with the SSRIs. On the basis of the data, the review recommends SSRIs as first-line agents in the pharmacotherapy of PTSD and supports their value in long-term treatment.

A meta-analysis of 4 RCTs that compared SSRIs to placebo without regard to diagnostic criteria, duration, severity, or co-morbid diagnoses reported that treatment favored the drug in all 4 trials; however, only one study (with 183 subjects) reached statistical significance. Two RCTs maintained treatment with an SSRI for 64 weeks and 40 weeks, respectively. One study reported that 50 percent of patients experienced worsening symptoms when placebo was substituted for active drug, and in the second report, patients on placebo were 6.4 times more likely to relapse compared to the drug group. Although some patients may respond to an

antidepressant trial within 3 months, some patients may require more than 12 weeks to respond to SSRIs (Martenyi et al., 2002).

Results with SSRIs are conflicting with respect to wartime-related PTSD. Martenyi et al. (2002), with combat veterans of recent wars, found fluoxetine to be significantly superior to placebo. Martenyi (2007) reported a negative fixed-dose trial with fluoxetine. In addition, Friedman et al. (2007), testing Vietnam vets with chronic PTSD in a VA hospital setting, observed no difference between sertraline and placebo. One should not extrapolate the findings of Friedman's paper to all veterans, as veterans with chronic PTSD who remain symptomatic after decades of VA treatment comprise a chronic treatment refractory cohort that is not representative of all male combat veterans with PTSD.

The SSRIs citalopram, escitalopram, and fluvoxamine have been not been studied sufficiently to warrant a recommendation.

Venlafaxine, an SNRI, has been shown to have positive results in two trials of more than 800 participants with non-combat-related PTSD (Davidson, 2006a, 2006b). Duloxetine and desvenlafaxine have not been studied and can not be recommended at this time. In a 24-week comparison trial, venlafaxine performed as well as sertraline in a civilian population (Davidson, 2006b).

Other monotherapy recommendations are mirtazapine, nefazodone, TCAs, and MAOIs, although these agents have been studied in fewer patients and are considered second-line treatment options. Of the TCAs, only amitriptyline and imipramine have demonstrated positive outcomes, while data on desipramine and nortriptyline have been negative and from poor-quality studies. Nefazodone has been the subject of several small- to mid-sized RCTs and case-control studies (Davis et al., 2000; Garfield et al., 2001; Gillin et al., 2001; Hertzberg et al., 1998; Hidalgo et al., 1999; Zisook et al., 2000). In all six studies, the drug was helpful in improving CAPS, HAM-D, sleep, and anxiety. In a trial of combat- and sexual assault-origin PTSD, nefazodone was more effective than placebo (Davis, 2004). Nefazodone has demonstrated efficacy equivalent to sertraline in two fair-quality trials (McRae, 2004; Saygin, 2002). Two trials with mirtazapine (Davidson, 2003; Chung, 2004) have demonstrated positive findings. However, in the placebo-controlled trial (Davidson, 2003), both mirtazapine and placebo had large effect sizes. In a trial of military veterans, mirtazapine was as efficacious as sertraline, but there was no placebo comparison arm (Chung, 2004). Of the currently available MOAIs, only phenelzine has been studied. In a placebo comparison trial, Vietnam veterans assigned to phenelzine had significant improvement in IES compared to placebo (Kosten, 1991).

Atypical Antipsychotics

Atypical antipsychotics are not effective as monotherapy. The efficacy of atypical antipsychotics as adjunctive treatment to antidepressants has been studied in trials composed primarily of veterans. Response was predominantly in hyperarousal and re-experiencing symptom clusters. There have been ten published RCTs of two different antipsychotics, risperidone and olanzapine. Quetiapine has been studied in one small open-label trial. Olanzapine as an adjunctive treatment improved CAPS scores and sleep quality compared to placebo in a small 8-week trial (Stein M, 2002). Quetiapine improved both PANS and CAPS scores compared to baseline (Hamner & Deitsch 2003b).

Six small trials, of variable design quality, use risperidone as an augmentation to other medications, rather than as a primary treatment. Risperidone has shown to improve psychotic symptoms. One trial addressed risperidone's role in co-morbid PTSD and

psychosis (Hamner, 2003a). A significant improvement in psychotic symptoms (change in PANS) was found in veterans treated with risperidone compared to placebo; both groups improved significantly in their CAPS scores. The results of the remaining 5 trials showed risperidone to have some benefit as adjunct to antidepressants, although only a small net benefit.

A seventh trial, conducted by the VA Cooperative Study Group (Krystal, 2011), randomized 247 veterans with military-related PTSD deemed resistant to antidepressants to risperidone (up to 4 mg/day) or placebo as adjunctive treatment. After 6 months the changes from baseline in CAPS scores were not significant between the two treatment arms. Changes in CAPS subscale scores for reexperiencing and hyperarousal were statistically significant favoring risperidone but the differences were not considered clinically important. No difference in the symptom scales for anxiety, depression, positive or negative symptoms, sleep or quality of life were found. The authors concluded that compared to placebo, risperidone did not reduce PTSD symptoms. This is the largest clinical trial of an atypical antipsychotic as a treatment of PTSD to date.

This study clearly shows that adjunctive risperidone does not benefit veterans with chronic PTSD; the results do not justify the risk for metabolic adverse effects. However, limited reductions in hyperarousal and reexperiencing suggest some benefit for a few patients. Low study attrition, low cross-site variability, multiple measures, and long study duration reinforce the validity of these findings. Some might object that the many other medications taken by these patients might have obscured risperidone's effects; but this objection is not clinically relevant as risperidone is always likely to be prescribed in this context. Results may not generalize to other atypical antipsychotics, to women, or to civilians.

Anticonvulsants

The existing evidence does not support the use of anticonvulsants as monotherapy for the management of PTSD core symptoms. Tiagabine has been compared to placebo in two RCTs, with no difference in response (Connor 2006; Davidson 2007). Valproate, as monotherapy, did not differ from placebo in one RCT (Davis, 2008). Anticonvulsants are frequently used as adjunctive treatments. Only topiramate has been studied in this role in veterans, with negative results (Lindley, 2007). Data on other anticonvulsants are insufficient to recommend their use in PTSD. A meta-analysis showed benefit in the use of valproate in PTSD (Adamou, 2007).

Benzodiazepines

Benzodiazepines are widely used for symptomatic control of insomnia, panic/anxiety, and irritability; there is no evidence that they reduce the core symptoms (e.g., syndromal symptoms) of PTSD, such as avoidance or dissociation (Friedman and Davidson & Stein, 2009; Viola et al., 1997). Kosten et al. (2000) present evidence that does not support the use of benzodiazepines in PTSD.

Benzodiazepine administration should be discouraged both in acute stress disorder (ASD) and post-traumatic stress disorder (PTSD), due to lack of evidence for effectiveness and risks that outweigh potential benefits. Although benzodiazepines have been frequently used "as needed" and continuously for anxiety disorders, including to augment evidence-based treatment modalities in PTSD, there is evidence to suggest that benzodiazepines may actually potentiate the acquisition of fear responses and worsen recovery from trauma. Benzodiazepine use should be considered relatively contraindicated in combat veterans with PTSD because of the very high co-morbidity of combat-related PTSD with alcohol misuse and substance

use disorders (upwards of 50 percent of co-morbidity) and potential problems with tolerance and dependence. Once initiated in combat veterans, benzodiazepines can be very difficult, if not impossible, to discontinue, due to significant withdrawal symptoms, compounded by the underlying PTSD symptoms.

The two clinical trials of benzodiazepines to treat PTSD have shown negative findings:

- Braun, et al. (1990) - In a randomized double-blind cross-over study, alprazolam showed no significant benefit in alleviating PTSD symptoms compared with placebo. A slight reduction in anxiety symptoms was offset by withdrawal effects documented after only five weeks of treatment.
- Cates, et al. (2004) - This small, single-blind cross-over placebo-controlled study compared clonazepam with placebo for the treatment of sleep dysfunction associated with combat-related PTSD. The study showed no significant difference between the benzodiazepine and placebo treatments.
- Viola et al. (1997) - At Tripler Army Medical Center, after having treated 632 patients, the vast majority of whom suffered from combat-related PTSD, between 1990 and 1996, the staff began to “explore treatment alternatives” to benzodiazepines due to the “risks attendant to benzodiazepine management of PTSD, coupled with poor clinical outcome”.
- Risse et al. (1990) - This case series reflects the typical clinical experience when benzodiazepines are utilized for treating combat-related PTSD. In this study, alprazolam was used to augment treatment of anxiety symptoms in 8 combat veterans with chronic PTSD and co-morbid conditions (mostly alcohol misuse). Although anxiety initially improved with treatment, the improvement was short-lived and resulted in tolerance to increasing doses and eventual failure of the treatment. The key problem was encountered upon attempting to gradually withdraw the medication after determining that ongoing treatment was not going to be of further benefit. All 8 patients experienced severe reactions, including anxiety, sleep disturbance, rage, hyper-alertness, increased nightmares, and intrusive thoughts; 6 of the 8 veterans developed a level of rage with homicidal ideation that they had never encountered previously.
- Randal et al. (1995) and Coupland et al. (1997) - Flumazenil, a benzodiazepine/GABA receptor antagonist, provokes panic attacks in patients with panic disorder but not in healthy controls. In these two studies (one of which involved a group of male Vietnam combat veterans), flumazenil was compared with placebo to determine if it provoked anxiety, panic, or PTSD symptoms. Both studies showed that there were no significant increases in anxiety, panic, or PTSD symptoms in subjects as a result of flumazenil administration. This suggests that PTSD is dissimilar to panic disorder in terms of benzodiazepine receptor functioning and helps to explain why benzodiazepine treatment has produced no significant benefits in clinical trials.
- Several studies involving different animal models of PTSD (for example, Matar et al., 2009; Hebert et al., 1996) have shown that benzodiazepine administration in the immediate aftermath of stress exposure significantly increases vulnerability of developing more severe responses upon subsequent exposure to stress.

Sympatholytics

Prazosin, as a global treatment for PTSD, has yielded mixed results; it has shown consistent efficacy in improving sleep and reducing nightmares. In five relatively

small studies (Raskind et al., 2002, 2003, and 2007; and Taylor 2006, 2008), prazosin has demonstrated a value in reducing nightmares and in improving CAPS, CGI, and CGIC scores. The goal of these studies was not evaluation of overall PTSD symptoms, but evaluation of targeted symptoms, which showed good outcomes.

(See discussion in Module I-3 A. Sleep Disturbance).

Guanfacine was studied in two trials (Neylan et al. 2006; and Davise et al., 2008). No effect was seen on measures of PTSD symptom severity for the actively treated group relative to the placebo group.

Other Agents

Buspirone, a non-benzodiazepine anti-anxiety drug, is reported to have “clinical efficacy” in two very small studies (Duffy & Malloy, 1994; Wells et al., 1991).

A single clinical investigation of the effect of the antibiotic **D-cycloserine** (Heresco-Levy et al., 2002) enrolled 11 patients in a crossover trial. While patients reported some improvement on self-reported measures of PTSD symptoms, similar improvements were seen in placebo-treated patients.

Table I - 7 Pharmacological Studies for Treatment of PTSD

Drug	Source of Evidence	Result	n	LE	QE	NB	SR
SSRI							
Sertraline *	Brady et al., 2000	Significant improvement, CAPS-2, CGI	187	I	G	Sub	A
	Chung et al, 2004	Mirtazapine is effective as sertraline Military veterans (Korean)	51	II-1	F	Mod	
	Davidson et al., 2001a	Significant responder rate, CAPS-2	208	I	G	Sub	
	Davidson et al., 2002	Study of effect on individual symptoms	?	II-2	F	Mod	
	Davidson et al., 2001b	Effective for preventing PTSD relapse	96	I	G	Sub	
	Friedman et al., 2007	No sig diff. between Tx and placebo. Combat trauma.	169	I	G	Zero	
	Londborg et al., 2001	Significant response maintained x 36 weeks	128	II-1	G	Sub	
	Rapaport et al., 2002	Significant response maintained x 64 weeks	359	I/II-1	G	Sub	
	Tucker et al., 2003	Significant improvement of primary outcome	58	I	F	Zero	
	Zohar et al., 2002	Numerical advantage (only), not sig, Israeli vets	42	I	G	Zero	
Paroxetine *	Marshall, 2007	Significant improvement, CAPS-2 & CGI	52	I	G	Sub	A
	Marshall, et al., 2001	Significant improvement, CAPS-2 & CGI	551	I	G	Sub	
	Tucker, et al., 2001	Significant improvement, CAPS-2	307	I	G	Sub	
Fluoxetine	Barnett et al., 2002	Study of tolerability. Well tolerated	65	I	G	Sub	A
	Connor et al., 1999	“Superior” response for civilian patients	53	I	G		
	Davidson, 2005	Well tolerated and effective in prevention of relapse, improved CGI. High rate of relapse	57	I	G	Sub	
	Martenyi, 2007	No significant dif. between Tx and Pbo; TOP-8	411	I	G	Zero	
	Martenyi et al., 2002a	Effective for prevention of PTSD relapse; 50% subjects - combat related	131	I	G	Sub	
	Martenyi et al., 2002b	Effective: improvement in TOP-8, CGI; 50% subjects -combat related	301	I	G	Sub	
	Meltzer-Brody, et al., 2000	Reduced all symptom clusters of PTSD;	53	II-2	F		
	Van der ko et al., 1994	Fluoxetine > placebo, more in non-VA pts	64	I	G	Sub	
Citalopram	Seedat et al., 2000	Significant improvement, CAPS-2	14	II-1	F	Zero	C
	Tucker et al, 2003	Sig improvement (↓ BP)	58	I	F	Neg	
Fluvoxamine	Escalona et al., 2002	Appears to improve PTSD symptoms	15	III	P	-	I
	Neylan et al., 2001	Improved sleep quality for Vietnam vets	21	III	P	-	

Drug	Source of Evidence	Result	n	LE	QE	NB	SR
TCA							
Amitriptyline	Davidson et al., 1990	Effective for core symptoms of PTSD	46	I	G	Mod	B
	Davidson et al., 1993	Significant improvement: IES, CGI, HAM-D	62	I	G		
Desipramine	Reist et al., 1989	Did not show efficacy; no statistics	27	III	P		
Imipramine	Kosten et al., 1991	Significant improvement, CAPS-2, IES	41	I	G		
Nortriptyline	Zygmunt et al., 1998	Effective for traumatic grief symptoms	22	II-1	G		
	Dow et al., 1997	Improvement in CGE for PTSD with MDD	72	II-2	F		
MAOI/RIMA							
Phenelzine	Kosten et al., 1991	Significant improvement in IES, better than placebo	37	I	G	Mod	B
SNRI							
Venlafaxine	Davidson et al., 2006	Effective in tx PTSD, Improves resilience	329	I	G	Sub	A
	Davidson et al., 2006b	Effective similar to sertraline	531	I	G	Sub	
Secondary AD							
Bupropion	Becker et al., 2007	Bupropion SR had no effect on PTSD	30	I	F	Neg	I
	Canive et al., 1998	No change in total CAPS score - male veterans	17	II-2	F		
Nefazodone	Davis et al., 2004	Nefazodone is effective and well tolerated ; Combat, sexual	42	I	G	Sub	B
	Davis et al., 2000	Significant improvement in CAPS, HAM-D	36	II-2	G		
	Garfield et al., 2001	Significant improvement in CAPS, anxiety	14	II-2	F		
	Gillin et al., 2001	Significant improvement in sleep, CAPS	12	II-2	F		
	Hidalgo et al., 1999	High response rate; pooled data, 6 studies	105	II-2	F		
	McRae et al., 2004	Nefazodone is effective as sertraline. High attrition rates	37	I	F	Sub	
	Saygin et al., 2002	Nefazodone is effective as sertraline and well tolerated	54	I	F	Sub	
	Zisook et al., 2000	Earthquake survivors PTSD symptoms lessened, CAPS	19	II-2	F		
Trazodone	Warner et al., 2001	Reduction in nightmares; 9 reported priapism	74	III	P		I
Mirtazapine	Chung et al., 2004	Mirtazapine is effective as sertraline and well tolerated. Military veterans (Korean)	51	II-1	F	Mod	B
	Davidson et al., 2003	Significant improvement in the SPRINT, SIP, DTS as compared to placebo	26	I	F	Mod	B

Drug	Source of Evidence	Result	n	LE	QE	NB	SR
Anticonvulsants							
Gabapentin	Hamner et al., 2001	Effective for insomnia, adjunct treatment	30	II-2	P	Zero	I
Lamotrigine	Hertzberg et al., 1999	Promising results	14	I	P	Zero	I
Topiramate	Lindley, 2007	No significant effect for topiramate over placebo	40	I	F	Zero	D
	Tucker, 2007	Not significant difference from placebo (non-combat)	38	I	G	Zero	
Valproate	Davis, 2008	Divalproex monotherapy was not effective in the treatment of chronic PTSD	85	I	G	Zero	D
	Adamou, 2007 (SR)	Valproate was generally effective in reducing hyperarousal, improving irritability and anger	63	I	F	Small	
Tiagabine	Connor, 2006	No significant improvement was observed on all outcome measures	29	I	F	Zero	D
	Davidson, 2007	No difference from placebo	232	I	G	Zero	
Atypical Antipsychotics							
Olanzapine	Butterfield et al., 2001	No beneficial effect. High placebo response	15	I	G		I
	Petty et al., 2001	Significant improvement in CAPS, CGI	48	II-1	G		
	Stein et al., 2002	Adjunct to SSRI. Sig. improve measures but not global PTSD	19	I	F	Mod	
Quetiapine	Hamner et al., 2003	Significant improvement in CAPS	20	II-1	F		I
Risperidone	Bartzokis et al., 2005	Risperidone (adjunct.) > placebo; Military vets.	48	I	G	Sub	D
	Krystal et al., 2011	Risperidone (adjunct) = placebo; Veterans.	247	I	G	Zero	
	Hamner et al., 2003	Adjunct to other meds, co-morbid psychoses. Vietnam vets	40	I	F	Sub	
	Monnelly et al., 2003	Risperidone > placebo; Military combat	15	I	F	Mod	
	Padala et al., 2006	Sexual assault - risperidone monotherapy > placebo	20	I	P	Small	
	Reich et al., 2004	Child abuse - risperidone > placebo;	21	I	F	Mod	
	Rothbaum et al., 2008	Civilian - risperidone (adjunct) was helpful in subjects who did not remit with sertraline alone	45	I	F	Small	

Drug	Source of Evidence	Result	n	LE	QE	NB	SR
Sympatholytics							
Clonidine	Kinzie & Leung, 1989	Cambodian refugees improved, dual therapy	68	III	P	-	I
Guanfacine	Horrigan & Barnhill, 1996	suppression of PTSD associated nightmares in children	1	III	P	-	D
	Neylan, 2006	No effect on PTSD symptoms (in vet military)	63	I	Good	Neg	
	Davis, 2008	No effect on PTSD symptoms	65	I	Good	Neg	
Prazosin	Raskind et al., 2003	Significant improvement, CAPS, CGI	10	I	F	Small	B
	Raskind et al., 2002	Significant improvement in dream scores	59	II-2	F	Zero	
	Raskind et al., 2007	Significant improved sleep quality, reduced nightmares, better overall sense of well-being.	34	I	G	Mod	
	Taylor et al., 2006	Reduction in global PTSD illness severity	11	II	P	Mod	
	Taylor et al., 2008	Significantly improved CGI-I scores and changed PDRS scores toward normal dreaming	13	I	F	Mod	
Benzodiazepines							
Benzodiaz.	Kosten et al., 2000	Not associated with adverse outcomes	370	II-2	F	Zero	D
Alprazolam	Braun et al., 1990	Did not show efficacy. (concern: rebound anxiety)	16	I	F	Zero	D
Clonazepam	Fossey & Hamner, 1994	A source of sexual dysfunction	42	III	P	Zero	D
	Gelpin et al., 1996	No beneficial effect in PTSD, may worsen outcome	20	II-1	F	Zero	
	Shalev & Rogel 1992	No effect on auditory startle	N/A	III	F	Zero	
Temazepam	Melman et al., 2002	No benefits in preventing PTSD; may worsen outcome	11	I	P	Zero	D
	Cates et al., 2004	No difference between the benzodiazepine and placebo		I	P	Zero	D
D-cycloserine							
	Heresco-Levy, 2002	Improvements in numbing, avoidance, and anxiety symptoms	11	I	Fair	Zero	I

LE=Level of Evidence QE=Quality of Evidence (F=Fair; G=Good; P=Poor); NB=Net benefit (Sub=Substantial; Mod = Moderate; Neg=Negative)

SR= Strength of Recommendation (see Appendix A)

* FDA Approved

Table I - 8 Symptom Response by Drug Class and Individual Drug (based on controlled trials)

		Global Improvement	Re-experiencing (B)	Avoidance/ Numbing (C)	Hyperarousal (D)
SSRI	Fluoxetine	X	X	X	X
	Sertraline	X	X	X	X
	Paroxetine	X	X	X	X
SNRI	Venlafaxine	X	X	X	X
TCAs	Amitriptyline/ Imipramine	X	X		X
MAOIs	Phenelzine	X	X		X
Sympatholytics	Prazosin	X	X		X
Other Anti-depressants	Mirtazapine	X	X		X
	Nefazodone	X	X		X

Table I - 9 Drug Details

Agent	*Oral Dose	Contraindications	Adverse Events	Pregnancy Category	Remarks
Selective Reuptake Serotonin Inhibitors (SSRIs)					
Fluoxetine	20 – 60 mg/d	Contraindications : - MAO inhibitor within 14 days - Concurrent use of pimozide or thioridazine - Hypersensitivity	- Nausea , diarrhea - Headache - Dizziness - Sexual dysfunction - Hyponatremia/SIADH (Syndrome of Inappropriate Anti-diuretic Hormone) - Nervousness, anxiety, agitation - Serotonin syndrome	- All except paroxetine are Category C - Paroxetine Category D - Women planning to breast-feed, consider an anti-depressant with the lowest excretion into breast milk: paroxetine, sertraline	- Avoid abrupt discontinuation of all except fluoxetine - Citalopram, escitalopram, and sertraline are less likely to be involved in hepatic enzyme drug interactions involving CYP2D6 or 3A4 - All except escitalopram are generically available - St. Johns Wort may in decrease the concentration of SSRIs metabolized by CYP2D6
Paroxetine	20 – 60 mg/d				
Sertraline	50 – 200 mg/d				
Fluvoxamine	50 – 150 mg bid				
Citalopram	20 – 60 mg/d				
Escitalopram	10 – 20 mg/d				
Tricyclic Antidepressants					
Imipramine	150 – 300 mg/d	Contraindications : - Clomipramine – seizure disorder - MAOI use within 14 days - Acute MI within 3 months - Hypersensitivity Relative Contraindications: - Coronary artery disease - Prostatic enlargement	- Dry mouth - Dry eyes - Constipation - Orthostatic hypotension - Increased heart rate - Ventricular arrhythmias - Weight gain - Drowsiness	- Category C - Women planning to breast-feed, consider an antidepressant with the lowest excretion into breast milk: nortriptyline	- Therapeutic blood concentrations not established for PTSD - Desipramine and nortriptyline have lower rate of sedation anticholinergic and hypotensive effects - Moderate CYP2D6 inhibition - St. Johns Wort may decrease the concentration of SSRIs metabolized by CYP2D6
Amitriptyline	150 – 300 mg/d				
Desipramine	100 – 300 mg/d				
Nortriptyline	50 – 150 mg/d				
Protriptyline	30 – 60 mg/d				
Clomipramine	150 – 250 mg/d				

Agent	*Oral Dose	Contraindications	Adverse Events	Pregnancy Category	Remarks
Monoamine Oxidase Inhibitors					
Phenelzine	45-75 mg/d in divided doses	Contraindications: • All antidepressants within 14 days of start of a MAOI, except fluoxetine is 5 weeks • Concurrent use with CNS stimulants or depressants and decongestants • CHF, hepatic or renal disease • Pheochromocytoma • Foods high in tyramine • Hypersensitivity	• Hypertensive crisis with drug/tyramine interactions • Bradycardia • Orthostatic hypotension • Insomnia • Dry mouth • Dry Eyes • Constipation	• Category C	• Patient must maintain a low-tyramine diet and avoid foods rich in tyramine • Tranycypromine should be taken early in the day to reduce insomnia • MAOIs are to be discontinued 2 weeks prior to starting another antidepressant or serotonergic agent
Tranylcypromine	10 – 60 mg/d target 1 mg/kg/d target 0.7 mg/kg/d				
Sympatholytics					
Propranolol	10-40 mg/d	Contraindications: • Sinus bradycardia, uncompensated congestive heart failure, 2nd or 3rd degree heart block, severe COPD or asthma, hypersensitivity to beta-blockers	• Hypotension, bronchospasm, bradycardia	• Category C • Breast-feeding – not recommended	• Has only been used in a single dose for prevention of PTSD
Prazosin	Target 6 – 10 mg/d Start with 1 mg at bedtime and increase as blood pressure allows.	• Hypersensitivity to quinazolines • Concurrent use of phosphodiesterase type-5 inhibitors	• First dose syncope	• Category C • Breast-feeding – effects unknown	• Primarily used for management of recurrent distressing dreams

Agent	*Oral Dose	Contraindications	Adverse Events	Pregnancy Category	Remarks
Novel Antidepressants					
Bupropion	150 – 450 mg/d	Contraindications : - MAOI use within 14 days (all) - Hypersensitivity Bupropion – single doses of regular-release >150 mg/d and total daily dose >450 mg/d. - History of seizures, anorexia or bulimia- Nefazodone - Active liver disease or increased liver enzymes - Use with carbamazepine, pimozone, cisapride, triazolam, and alprazolam	- Bupropion: headache, insomnia, dizziness, weight loss, decreased appetite, anxiety, agitation, nervousness, sleep disturbances - Nefazodone: hepatotoxicity - Trazodone and nefazodone: sedation, rare priapism - Venlafaxine: hypertension in patients with pre-existing hypertension, headache, insomnia, somnolence, nervousness, dizziness, anorexia - Mirtazapine: weight gain, increase appetite, somnolence, dry mouth	Category C (all)	- Need to taper venlafaxine to prevent rebound signs/symptoms - The group has a lower rate of sexual dysfunction compared to SSRIs - Obtain baseline LFTs when treating with nefazodone - Nefazodone is a potent CYP3A4 inhibitor - St. Johns Wort may increase mirtazapine's metabolism
Nefazodone	300 – 600 mg/d				
Trazodone	300 – 600 mg/d				
Venlafaxine	150 – 375 mg/d				
Mirtazapine	30 – 60 mg/d				

Agent	*Oral Dose	Contraindications	Adverse Events	Pregnancy Category	Remarks
Anticonvulsants					
Carbamazepine	target 400 – 1600 mg/d	Contraindications: - bone marrow suppression, particularly leukopenia - hypersensitivity to carbamazepine, pimozone, or tricyclic antidepressants - MAOI use within 14 days - Concurrent use of nefazodone	bone marrow suppression, aplastic anemia, leukopenia, SIADH, drowsiness, ataxia, photosensitivity, serious dermatologic reactions, including Stevens-Johnson syndrome, A-V block, and bradycardia	- Category D - Excreted into breast milk in high concentrations; measurable in infant serum.	- Therapeutic blood concentration are not established for PTSD, but monitoring may be useful in cases of suspected toxicity (usual range 4 – 12 mcg/mL) - Strong inducer of CYP 1A2, 2B6, 2C8, 2C9, 2C19, and 3A4. Induction can reduce effectiveness of many medication, such as oral contraceptives
Gabapentin	target 300 – 3600 mg/d	renal impairment	- sedation, ataxia - peripheral edema	- Category C - Excreted into breast milk; effects unknown	
Lamotrigine	Not taking divalproex or CBZ: 25 mg once a day for 2 weeks, then 50 mg/day for 2 weeks, then 100 mg/day for 1 week	increased rash with valproate; max dose of 200 mg	- Stevens-Johnson syndrome - Fatigue - Headache - Peripheral edema - Rash - Vision changes	- Category C - Excreted in breast milk in measurable level	
Topiramate	target 200 – 400 mg/d. Start with 25 – 50 mg/d and increase by 15 – 50 mg/week to maximum dose or as tolerated.	hepatic impairment	- angle closure glaucoma - sedation - dizziness - ataxia - cognitive impairment - weight loss - paresthesia - vision changes	- Category C - Excreted into breast milk; breast-feeding not recommended	Adjust dose base on renal function - Taking divalproex: 25 mg every other day for 2 weeks, then 25 mg/day for 2 weeks, then 50 mg/day for 1 week, then 100 mg/day - Taking enzyme-inducing drug (eg, CBZ): 50 mg/day for 2 weeks, then 100 mg/day for 2 weeks, then 200 mg/day for 1 week, then 300 mg/day for 1 week
Valproate	target 10 – 15 mg/kg/d	impaired liver function, thrombocytopenia	- nausea/vomiting - sedation - ataxia - thrombocytopenia - Alopecia - Weight gain - pancreatitis	- Category D - Low concentrations in breast milk and infant. Theoretical risk for hepatotoxicity or thrombocytopenia. Monitor for jaundice, liver damage, bleeding.	

Agent	*Oral Dose	Contraindications	Adverse Events	Pregnancy Category	Remarks
Benzodiazepines					
Clonazepam Lorazepam Alprazolam Diazepam	Start - 0.25 mg bid, increase by 0.25 mg every 1-2 days; maximum 20 mg/d 2 – 4 mg/d, 1.5 to 6 mg/d, 10 - 40 mg/d	Contraindications: • hypersensitivity • significant liver disease (clonazepam) • narrow angle glaucoma • severe respiratory insufficiency (lorazepam) • Caution in elderly patients and patients with impaired liver function. • Risk of abuse in patients with history of substance abuse	• sedation • memory impairment • ataxia • dependence • confusion • hypotension	• Category D (all) • All enter breast milk; breast-feeding not recommended	• If doses sustained > 2 months at therapeutic doses, then drug should be tapered over 4-week period • Alprazolam – concern with rebound anxiety
Typical antipsychotics					
Chlorpromazine Haloperidol	100 – 800 mg/d 2 – 20 mg/d	Contraindication : • Parkinson's disease • QTc prolongation or concurrent use with medications that prolong the QTc interval • Severe CNS depression • Hypersensitivity	• Sedation • Orthostatic hypotension with chlorpromazine, thioridazine • Akathisia • Dystonia • Drug-induced parkinsonism • Tardive dyskinesia may occur with all anti-psychotics with long-term use. • Neuroleptic malignant syndrome • QTc changes	• Category C (all) • All enter breast milk; not recommended	• Therapeutic doses not established in the treatment of PTSD • Use should be well justified in medical record because of the risk of tardive dyskinesia.

Agent	*Oral Dose	Contraindications	Adverse Events	Pregnancy Category	Remarks
Atypical antipsychotics					
Olanzapine	5 – 20 mg/d	Relative contraindication: • Parkinson's disease • Hypersensitivity	• Sedation • Weight gain • Neuroleptic malignant syndrome • Higher doses may cause akathisia, drug-induced parkinsonism, especially with risperidone doses >6 mg/d	Olanzapine: Category C Quetiapine: Category C Risperidone: Category C • All excreted into breast milk; not recommended; use with caution	• Therapeutic doses not established for PTSD • Weight gain occurs with all agents; however, olanzapine produces significantly greater gain • The relative risk of tardive dyskinesia compared to typical antipsychotics has not been established for these agents • Monitor for development of diabetes/hyperglycemia , increased cholesterol, and triglycerides
Quetiapine	300 – 800 mg/d				
Risperidone	1 – 6 mg/d				
Non-benzodiazepine					
hypnotics - Zaleplon - Zolpidem	5 – 10 mg/d 5 – 10 mg/d	Contraindications: • Hypersensitivity Precautions: • Caution with alcohol/drug abuse history • Caution in elderly and patients with liver dysfunction	• Sedation • Ataxia • Rebound insomnia may occur • Dizziness • Headache • Behavioral changes, bizarre behavior, hazardous activities while asleep	• Category C (both) • Enters breast milk; avoid zaleplon; use zolpidem with caution	• Abuse has occurred, resulting in withdrawal reactions • Zolpidem is a CYP3A4 substrate and its metabolism can be decreased by 3A4 inhibitors
anti-anxiety - Buspirone	20 – 60 mg/d	Precaution: • MAOI use within 14 days	• Nausea • Headache • Dizziness • Drowsiness	• Category B • Excretion into breast milk unknown; not recommended	• Buspirone is a CYP3A4 substrate, and its metabolism can be decreased by 3A4 inhibitors

*Dose adjustments may be necessary in renal or hepatic impairment

D. ADJUNCTIVE SERVICES

D1. Psychosocial Rehabilitation

BACKGROUND

Patients with chronic PTSD may develop a persistent incapacitating mental illness marked by severe and intolerable symptoms; marital, social, and vocational disability; and extensive use of psychiatric and community services. These patients may sometimes benefit more from therapeutic intervention that facilitates generalizing skills for coping with PTSD from clinic to home/work/community, such as case management and psychosocial rehabilitation, than from psycho- or pharmacotherapy.

Psychosocial Rehabilitation involves clinicians providing family psychoeducation, supported employment, supported education, and supported housing; some serving as case managers; or others working with peer counselors. VHA's Uniform Mental Health Services policies (VHA Handbook, 2009) now mandate psychosocial rehabilitation, expanding such services from inpatient units to outpatient programs in Primary Care settings, Outpatient clinics, Community-Based Outpatient Clinics (CBOCs), Vet Centers, and Home-Based Care programs and in partnerships with agencies and providers in communities.

RECOMMENDATIONS

1. Consider psychosocial rehabilitation techniques once the client and clinician identify the following kinds of problems associated with the diagnosis of PTSD: persistent high-risk behaviors, lack of self-care/independent living skills, homelessness, interactions with a family that does not understand PTSD, socially inactive, unemployed, and encounters with barriers to various forms of treatment/rehabilitation services.
2. Patient and clinician should determine whether such problems are associated with core symptoms of PTSD and, if so, ensure that rehabilitation techniques are used as a contextual vehicle for alleviating PTSD symptoms.
3. Psychosocial rehabilitation should occur concurrently or shortly after a course of treatment for PTSD, since psychosocial rehabilitation is not trauma-focused.

DISCUSSION

Penk and Flannery (2000) listed seven forms of psychosocial rehabilitation as clinical practice guidelines for Post-Traumatic Stress Disorder (PTSD):

1. Patient education services
2. Self-Care and Independent Living Skills Techniques
3. Supported Housing
4. Marital/Family Skills Training
5. Social Skills Training
6. Vocational Rehabilitation
7. Case Management

A decade later, Penk & Ainspan (2009) suggested adding to this list: 8) Physical health and well-being and computer-assisted self-management training in reducing PTSD and other mental disorders, such as addictions and depression.

Table I - 10 Adjunctive Problem-Focused Method / Services

If the client and clinician together conclude that the patient with PTSD:		Service/Training
1	Is not fully informed about aspects of health needs and does not avoid high-risk behaviors (e.g., PTSD, substance use)	Provide patient education
2	Does not have sufficient self-care and independent living skills	Refer to self-care/independent living skills training services
3	Does not have safe, decent, affordable, stable housing that is consistent with treatment goals	Use and/or refer to supported housing services
4	Does not have a family that is actively supportive and/or knowledgeable about treatment for PTSD	Implement family skills training
5	Is not socially active	Implement social skills training
6	Does not have a job that provides adequate income and/or fully uses his or her training and skills	Implement vocational rehabilitation training
7	Is unable to locate and coordinate access to services, such as those listed above	Use case management services
8	Does request spiritual support	Provide access to religious/spiritual advisors and/or other resources
OTHER CONDITIONS		
9	Does have a borderline personality disorder typified by parasuicidal behaviors	Consider Dialectical Behavioral Therapy
10	Does have concurrent substance abuse problem	Integrated PTSD substance abuse treatment

The empirical literature on group treatment for PTSD has grown since the publication of the first edition of the Treatment Guidelines for PTSD.

Evidence-based research from randomized clinical trials is now available to support recommending psychosocial rehabilitation when treating veterans (Glynn, Drebing, & Penk, 2009). Psychosocial Rehabilitations are not limited to veterans with schizophrenia or other psychoses. Psychosocial rehabilitations are recognized as efficacious in treating Post-Traumatic Stress Disorders (PTSDs), Major Depression Disorders (MDDs), and Addictions, especially when mental health practices are delivered through self-management manuals and the Internet, integrated into supported education and supported employment

The psychosocial rehabilitation model may include medication as needed, skills training designed to assist veterans to live productively in the community, and various forms of psychotherapy. Integrating trauma-focused psychotherapies with psychosocial rehabilitation is currently under-utilized, but new interventions are being empirically validated to bring together several forms of treatments and rehabilitation for PTSD.

Models of Psychosocial Rehabilitation Services

1. Education

- Family psychoeducation is the process of providing education and coping skills for veterans and their families about relevant medical and mental disorders. Examples of such psychosocial rehabilitation are the family interventions for PTSD developed at the VA in West Los Angeles and manualized approaches designed by Sherman, Sautter, Lyons, Manguno-Mire, Han, and Perry (2005), delivered at VHA medical centers in VISN 16—Oklahoma City, Jackson, and Houston.

- Family psychoeducation generally takes place in multi-family groups (producing the added benefit of augmenting social support), but such techniques can also be given in single-family formats or even by books or online (e.g., Sherman & Sherman, 2005).
- Family psychoeducation is noted for fostering social support, challenging a key symptom in Post-Traumatic Stress Disorder (PTSD), which is characterized by social avoidance and isolation. Precautions are needed in fielding family psychoeducation among many different families, since consent of each individual is always required when information is shared about a veteran's illness and/or about families' symptoms and ways of coping. Family psychoeducation is a treatment modality in which families are a partner in providing services to each other: Families are not objects in treatment.
- Family psychoeducation is effective, particularly for PTSD (Glynn, Drebing, & Penk, 2009), and hence is well regarded in the VHA and emphasized in mental health services. Studies from different countries over the past 20 years show that family psychoeducation reduces the rates of re-hospitalization by an average of 50 percent.

2. Self-Care and Independent Living Skills Techniques

- While social rehabilitative therapies (i.e., teaching social, coping, and life function skills) have been proven to be effective in chronic schizophrenic and other persistently impaired psychiatric cohorts, they have yet to be formally tested with PTSD clients. Since they appear to generalize well from clients with one mental disorder to another, it is reasonable to expect that they will also work with PTSD clients. There is clinical consensus that appropriate outcomes would be improvement in self-care, family function, independent living, social skills, and maintenance of employment.
- Given the positive impact of independent skills training techniques for mental disorders in general (Halford et al., 1995), PTSD-centered modules should be developed and tested for effectiveness.

3. Supported Housing

- VHA, for decades, has offered support for housing through residential care programs, such as residential care in inpatient units, domiciliaries, affiliations with state and local housing resources, vouchers for single-room occupancy, and congregate housing in private homes.
- Forms of housing that are considered more effective are those in which clinical services are integrated or efforts are made by the treating staff to foster community living (Goldfinger et al., 1997; Schutt & Garrett, 1992).
- Existing literature for persons with other forms of mental illness demonstrates that case management linked to specialized clinical services is more effective than "single-room occupancy" or "warehousing" in shelters without other forms of support (Goldfinger et al., 1997).
- The greatest risk to ending housing arrangement and likelihood of discontinuing rehabilitation arises from addictions (Goldfinger, Schutt, Tolomiczenko, Seidman, Penk, Turner, 1999; Rog, 2000; Tsemberis & Eisenberg, 2000; Culhane, Metraux, & Hadley, 2002). Thus, interventions that provide housing support are critical to success in rehabilitation (Mares, Kaspro, & Rosenheck, 2004).

- Research on outcomes for compensated work therapy transitional residence model (CWT/TR) have shown that such endeavors indeed are quite successful in transitioning homeless, unemployed veterans who have been hospitalized in inpatient units from VA medical centers to independent living in the community (Schutt, Rosenheck, Penk, Drebing, & Seibyl, 2005). The program requires that unemployed, homeless veterans work in CWT (and, later, other jobs) in order to gain access to VHA housing for a limited time before transitioning to housing on one's own or in private congregate housing with other veterans.
- Outcome studies show that such interventions are successful in promoting tenure in jobs and in personal living arrangements and promoting healthier styles of living, as well as lowering costs due to reduce recidivism, (Cook, 2001; McKay, Johnsen, Banks and Stein, 2005; Cowell, Pollio, North, et al, 2003; Pelletier, Ngyuen, Bradley, et al, 2005).

4. Marital/Family Skills Training

- Marital and family treatments for trauma survivors fall into one of two general categories: systemic approaches designed to treat marital or family disruption, and supportive approaches designed to help family members offer support for an individual being treated for PTSD. These treatments are usually provided as an adjunct to other forms of treatment that are designed to directly address the PTSD symptoms.
- A single, low-quality RCT compared the addition of family therapy to individual therapy for war veterans with PTSD (Glynn et al., 1999). It found no significant benefit to the addition of behavioral family therapy (BFT), largely due to a high dropout rate, nor did it add significantly to the treatment of PTSD with direct therapeutic exposure (DTE) (an individual psychotherapy technique).
- There are no research studies on the effectiveness of marital/family therapy for the treatment of PTSD. However, because of trauma's unique effects on interpersonal relatedness, clinical wisdom indicates that spouses and families be included in the treatment of those with PTSD. Of note, marriage counselling is typically contraindicated in cases of domestic violence, until the batterer has been successfully (individually) rehabilitated.

5. Social Skills Training

- Effectiveness of social skills training has been well demonstrated over many years in many RCTs but not specifically for PTSD (Dilk & Bond, 1996).
- Effectiveness of social skills training has been demonstrated to reduce social isolation of persons with severe mental disorders (e.g., schizophrenia); similar techniques may be promising for PTSD, particularly if adapted to address antecedent conditions involved in trauma and its consequences (Foa & Rothbaum, 1991).

6. Vocational Rehabilitation

- Effectiveness of vocational rehabilitation techniques in treating mental disorders has been demonstrated under controlled experimental conditions (Bell & Lysaker, 1996; Bell et al., 1996; Bell et al., 1993; Bond et al., 1997) and controlled clinical studies (Anthony et al., 1995; Drake, 1996; Lehman, 1995; Lysaker et al., 1993).

- As a form of psychosocial rehabilitation, Supported Employment (SE) means that individuals with mental health disorders learn how to find and keep regular, real-world jobs in the community. In SE, vocational rehabilitation specialists provide continuous support to assist veterans achieve success at work. Outcomes for SE have been shown to be much better than for traditional approaches, and this finding has been replicated in several countries (Bond, Drake and Mueser, 1997; Latimer, Lecomte, Becker, et al., 2006; Oldman, Thomson, Calsaferrri, et al., 2005).
- Strong outcome data exist to support the efficacy of Supported Employment (SE) for veterans with medical and mental disorders (Glynn, Drebing, & Penk, 2009).
- SE consists of many different kinds of interventions, including the “place-and-train” model that uses on-the-job training within and outside VA medical centers (Penk, 2000).
- A Cochrane Report reviewed eighteen randomized controlled trials among non-veteran and veteran samples, mostly those with serious mental disorders, and found that SE was superior to programs that offered pre-vocational training (Crowther, Marshall, Bond, and Huxley, 2001).
- SE was found to be associated with fewer crises, less chaos, more structure, and on-going support from vocational rehabilitation specialists, because consumers now focus on developing their lives in the community and managing their illness more independently (Bond, Becker, and Drake, 2001).
- Effect sizes for treating PTSD with Supported Employment are sizable (e.g., Glynn, Drebing, & Penk; 2009; Drebing, Van Ormer, Rosenheck, Rounsaville, Herz, & Penk, 2005; Drebing, Van Ormer, Schutt, Krebs, Losardo, Boyd, Penk, & Rosenheck, 2004; Drebing, Van Ormer, Rosenheck, Rounsaville, Herz, & Penk, 2005; Rogers, Anthony, Lyass, & Penk, 2006; Drebing, Van Ormer, Mueller, Hebert, Penk, Petry, Rosenheck, & Rounsaville, 2007).

7. Case Management

Although case management has been shown to be useful for a range of other psychiatric disorders, there is currently no evidence available from RCTs or from systematic reviews to support or reject the use of case management for PTSD patients.

- Among populations with histories of trauma, the assertive community treatment models have been empirically validated under controlled (but not with random assignment) conditions (Mueser et al., 1998).
- Most of the research that empirically validates case management has been conducted among persons with severe mental disorders (Mueser et al., 1998), presumably including persons with co-occurring PTSD and other disorders.
- Evidence suggests that outcomes are more favorable for intensive case management (well-trained clinician teaches client psychosocial rehabilitation skills in the client's home/community) than for simple case management (clinician links client to needed services).
- Case management has been demonstrated to reduce in-patient hospitalizations and severe symptoms, as well as stabilize housing for formerly homeless persons; however, there is little evidence to suggest that case management improves vocational adjustment/social functioning (Mueser et al., 1998).

D2. Spiritual Support

BACKGROUND

Religion may provide a framework by which many survivors of trauma construct a meaningful account of their experience and may be a useful focus for intervention with trauma survivors. The terms “religious” and “spiritual” are both used in the clinical literature to refer to beliefs and practices to which individuals may turn for support following a traumatic event.

DISCUSSION

There is a large body of anecdotal literature documenting the propensity of individuals to seek religious/spiritual comfort following a traumatic event. The terrorist attacks of September 11, 2001 provide a recent instance of this phenomenon. Meisenhelder (2002) noted that “the events of September 11, 2001 triggered . . . an increase in attendance in religious services and practices immediately following the tragic events.” Schuster and colleagues (2001) performed a nationwide phone survey of 569 adults within a week of the attacks, and found that 90 percent reported coping by “turning to religion.”

A study of help-seeking military veterans found significant associations between negative religious coping, lack of forgiveness, and worse PTSD and depression symptoms (Witvliet et al., 2004). Similarly, loss of religious faith was found to be associated with greater utilization of mental health services among military veterans in treatment for PTSD (Fontana & Rosenheck, 2004).

In a study of religiously active trauma survivors, positive relationships were found between a measure of positive religious coping, seeking spiritual support, and posttraumatic growth. In the same study a negative religious coping indicator, religious strain, was associated with increased post-traumatic symptoms (Harris et al., 2008). Hypothetical pathways for positive physical/mental health benefits from religious/spiritual practice include; (1) reduction of behavioral risks through healthy religious lifestyles (e.g., less drinking or smoking), (2) expanded social support through involvement in spiritual communities, (3) enhancement of coping skills and helpful cognitive appraisals resulting in meaning making, and (4) physiological mechanisms such as activation of the “relaxation response” through prayer or meditation.

Chaplains/pastoral care teams work can work in close collaboration with mental health providers to ensure that patients who desire it are presented with a spiritual care experience that results in emotional comfort and improved satisfaction with care (Clark et al., 2003). For some, Chaplains may play an important role in helping individuals regain a sense that their basic life assumptions are true. They can also provide opportunities for participation in prayers, mantras, rites, and rituals, and appropriate end-of-life care as determined important by the patient (Canda & Phaobtong, 1992; Lee, 1997). Often, Chaplains represent the first source of support sought by those experiencing PTSD symptoms. The act of talking to a Chaplain is unlikely to be accompanied by the same perception of stigma as the seeking of mental health treatment, and, in active duty military settings, Chaplains are more able to provide confidentiality than their mental health provider colleagues. Therefore, in addition to providing counseling services, Chaplains can play a key role in encouraging participation in treatment for those who may require it. Finally, Chaplains can often provide an important link to the larger community for those with PTSD who have limited social participation.

EVIDENCE

	Recommendation	Sources	LE	QE	SR
1	Assess for spiritual needs and facilitate access to spiritual/religious care when sought	Canda and Phaobtong, 1992 Clark et al., 2003 Fontana, 2004 Harris et al., 2008 Lee, 1997 Witvliet et al., 2004	II, III	Poor	I

LE =Level of Evidence; QE = Quality of Evidence; SR = Strength of Recommendation (see Appendix A)

E. SOMATIC TREATMENT

E1. Biomedical Somatic Therapies

OBJECTIVE

Evaluate the evidence for efficacy of Biomedical Somatic Therapies, including Electroconvulsive Therapy (ECT), Cranial Electrotherapy Stimulation (CES), Vagal Nerve Stimulation (VNS), Repetitive Transcranial Magnetic Stimulation (rTMS), and Deep Brain Stimulation (DBS), in the treatment of PTSD.

BACKGROUND

There has been little research studying these modalities in the treatment of PTSD. ECT has strong research support in the treatment of refractory depression. VNS, rTMS, and CES have been cleared for marketing by the FDA for the treatment of depression, and DBS has been given a humanitarian exemption clearance for marketing for the treatment of Obsessive Compulsive Disorder. None of these modalities has been approved for the treatment of PTSD.

RECOMMENDATIONS

1. There is insufficient evidence to recommend the use of any of the Biomedical Somatic Therapies for first-line treatment of PTSD. [D]
2. ECT and rTMS may be considered as an alternative in chronic, severe, medication- and psychotherapy-resistant PTSD. [B]

DISCUSSION

Although there is significant interest in biomedical somatic interventions in PTSD, there is no evidence for their use as a first-line treatment for PTSD. ECT and rTMS may be beneficial in chronic, treatment-resistant PTSD; however, their use has to be further studied in larger patient populations and specifically in combat veterans.

Electroconvulsive Therapy (ECT)

Watts (2007) reports a VA retrospective chart review study of 12 hospitalized Vietnam veterans with severe refractory depression (including bipolar depression) with co-morbid PTSD who underwent a course of ECT. Results showed good response for depressive symptoms but minimal response for PTSD symptoms.

Margoob et al. (2010) reports on an open ECT trial for 20 patients (17 completers) with severe, chronic, antidepressant- and CBT-refractory PTSD who were prospectively treated with a fixed course of 6 bilateral ECT treatments on an outpatient basis. The improvement in PTSD (40 percent), measured by CAPS, was independent of the improvement in depression (57 percent), and treatment gains were maintained at 4-6 months of follow-up.

Repetitive Transcranial Magnetic Stimulation (rTMS)

Rosenberg (2002) added rTMS to standard antidepressant therapy in 12 patients with PTSD and found that depression responded strongly but that PTSD benefits were minimal.

Osuch (2009) studied rTMS as an adjunct to exposure therapy and existing medications in 9 patients with co-morbid major depression and PTSD in a double-blind crossover study that included a sham arm and found a decrease in hyperarousal symptoms alone.

Cohen (2004) reported findings of an RCT that showed significant improvement in PTSD core symptoms of re-experiencing and avoidance, but only when a 10-Hertz treatment was delivered (note that Osuch utilized no more than 5-Hertz strength).

Boggio et al. (2009) studied the efficacy of 20 Hz rTMS of either the right or left dorsolateral prefrontal cortex (DLPFC) as compared to sham rTMS in 30 patients with chronic PTSD in a double blind, placebo-controlled trial with a sham arm. Both active conditions—20 Hz rTMS of the left and right DLPFC—induced a significant decrease in PTSD symptoms, based on the PTSD Checklist and Treatment Outcome PTSD Scale; however, right rTMS induced a larger effect than left rTMS. Improvements in PTSD symptoms were still significant at the 3-month follow-up. Neuropsychological evaluation showed that active 20 Hz rTMS was not associated with cognitive worsening in patients with PTSD.

Vagal Nerve Stimulation (VNS)

There is one open pilot study of Vagal Nerve Stimulation for treatment-resistant anxiety disorders (George, 2008) that included two patients with PTSD. This study does not provide sufficient evidence on which to base a recommendation regarding the use of VNS in the treatment of PTSD.

Although there has been significant interest and widespread utilization of CES in the treatment of PTSD, there is insufficient evidence for or against its use.

Conclusion:

While intriguing, the findings from these studies are limited by a small number of patients and co-morbid symptomatology and do not provide adequate support to recommend any of the biomedical somatic interventions as a first-line treatment for PTSD. rTMS and ECT have had initial evidence of possible benefits in chronic, treatment-resistant PTSD; however, more studies in larger patient populations are needed.

EVIDENCE TABLE

	Evidence	Source	LE	QE	SR
1	Any Biomedical Somatic Therapies for first-line treatment of PTSD				D
2	ECT – for PTSD co-morbid with severe refractory depression	Watts, 2007 Margoob, 2010	II-3 II-2	Fair	B
3	rTMS - Good PTSD outcome at higher frequency Primarily for co-morbid depression added to antidepressant. Depression benefit robust	Burt, 2002 Cohen, 2004 Boggio, 2009 Rosenberg, 2002 Osuch, 2009	III I I I II-1	Poor Good Fair	B
4	VNS - vagus nerve stimulation (VNS) for treatment-resistant anxiety disorders	George, 2008	I	Poor	I

LE=Level of Evidence QE=Quality of Evidence; SR= Strength of Recommendation (see Appendix A)

E2. Acupuncture

OBJECTIVE

Improve management of PTSD symptoms, particularly when accompanied by associated symptoms of chronic pain, depression, insomnia, anxiety, or substance abuse.

BACKGROUND

The practice of needling in acupuncture to mediate pain, one of the well-accepted indications for acupuncture, is thought to occur through the production of endogenous monoamines and neuropeptides. Besides activating neurohumoral pathways, acupuncture stimulates neural connections associated with the Autonomic Nervous System, prefrontal cortex, and limbic system, all structures thought to regulate the pathophysiology of PTSD. Acupuncture investigation for the treatment of PTSD has been limited to, at best, two (English) RCTs. However, symptomatic relief of disturbances associated with PTSD symptom clusters enhances the consideration of the use of this modality.

RECOMMENDATIONS

1. Acupuncture may be considered as treatment for patients with PTSD. [B]

DISCUSSION

Research focusing on the efficacy of acupuncture is still relatively limited. The few available studies are well done and demonstrate significant improvement in both PTSD and PTSD-associated symptomatology. A larger numbers of studies exist, concluding acupuncture's efficacy in pain management, insomnia, depression, and substance abuse.

Hollifield et al. (2007) evaluated the potential efficacy and acceptability of acupuncture for the treatment of PTSD. Individuals diagnosed with PTSD were randomized to an acupuncture treatment group (ACU), a cognitive-behavioral therapy group (CBT), or a wait list control group (WLC). The primary outcome measure was self-reported PTSD symptoms at baseline, end treatment, and 3-month follow-up. Repeated measures MANOVA was used to detect predicted Group X Time effects in both intent-to-treat (ITT) and treatment completion models. Compared with the WLC condition in the ITT model, acupuncture provided large treatment effects for PTSD ($F [1, 46] = 12.60$; $p < 0.01$;

Cohen's $d = 1.29$), similar in magnitude to group CBT ($F [1, 47] = 12.45$; $p < 0.01$; $d = 1.42$) (ACU vs. CBT, $d = 0.29$). Symptom reductions at end treatment were maintained at the 3-month follow-up for both interventions.

A recent unpublished DoD/VA RCT studied 55 active duty members with PTSD, randomized to PTSD treatment as usual (TAU) and PTSD treatment as usual plus eight 90 minute acupuncture sessions delivered twice weekly for four weeks (TAU + Acupuncture). Outcome measures included: Clinician-Administered PTSD Scale (CAPS), PTSD Checklist (PCL), Becks Depression Inventory (BDI I-II), Numeric Rating Scale for Pain (NRS), and SF-36v2. Follow-up was at baseline and 4, 8, and 12 weeks post-randomization. Compared to usual PTSD care, a 4-week course of twice-weekly acupuncture resulted in significantly greater improvement in PTSD symptoms (Pre-post ES 1.4-1.6 versus usual care ES 0.12-0.74), significant improvement in depression, and significant improvement in pain.

EVIDENCE TABLE

	Evidence	Source	LE	QE	SR
1	There is some evidence that acupuncture may be helpful with the management of Post-Traumatic Stress Disorder, acute or chronic.	Hollified et al., 2007	I	Good	B

LE=Level of Evidence QE=Quality of Evidence; SR= Strength of Recommendation (see Appendix A)

F. COMPLEMENTARY AND ALTERNATIVE MEDICINE

OBJECTIVE

Identify interventions derived from traditional and nontraditional complementary approaches that may provide effective first-line or adjunctive treatment for PTSD.

BACKGROUND

Complementary and alternative medicine (CAM) is a group of diverse medical practices, products, and systems that are not generally considered part of conventional medicine. While there is limited evidence to suggest that any of the CAM therapies listed below are efficacious for PTSD, these interventions may be of value in dealing with other symptoms (particularly those associated with hyperarousal) or co-morbid conditions. There is little evidence that these interventions are harmful. Some patients who may be reluctant to accept mental health labels or interventions may be more accepting of these novel treatment approaches. CAM interventions are affordable and generally accessible in communities across the nation. Many CAM therapies are practiced in a group setting, which may have the added benefit of increasing socialization. CAM programs may be engaged as a family that could increase social support and reduce stress for all family members. CAM approaches often provide an increased sense of mastery and control that may promote greater resilience.

Since complementary medicine may relate to particular cultural backgrounds or other belief systems, health professionals should be aware of, and sensitive to, the needs and desires of the patient and the family. Health professionals should be willing to discuss the effectiveness of therapy and different options of care within the context of the current healthcare system.

CAM Modalities:

CAM modalities are typically grouped into broad categories reflecting putative mechanism of action: However, this is more for convenience than any specific biologic underpinnings. Many modalities, such as acupuncture, span more than one category. Generally consistent with the schema offered by the National Center for Complimentary and Alternative Medicine these groups are:

Natural Products (Biologically Based Practices): Biologically based therapies that use natural substances (e.g., herbs, foods, vitamins, dietary supplements, homeopathic remedies) to promote healing and wellness.

Mind-Body Medicine: Approaches that seek to enhance general well-being through balancing mind and body. These practices emphasize the use of the mind, the body, or a combination of mental and physical activities to harmonize mind-body functioning to promote health and well-being. Those that focus primarily on mental activity include prayer and guided imagery. Those that emphasize the integration of mind and body for experiencing more fundamental processes underlying cognitive reflection include meditation, yoga, Tai Chi, breath-oriented therapies, and expressive arts therapies (such as dance, music, and art therapies).

Biofeedback (both neurofeedback that trains one to regulate attentional states via regulation of beta, alpha, theta, and delta EEG spectral analysis, as well as psychophysiological regulation of HR, Respiration, SC, EMG, and HRV) could, like hypnosis, be considered standard approaches to psychotherapy, and be included under that category. Research has shown positive outcomes for biofeedback for pain, sleep, and anxiety. Various relaxation skills (such as progressive muscle relaxation) are utilized as part of biofeedback.

Manipulation and Body Based Practices (Exercise and Movement): These practices are based on the manipulation of one or more parts or systems of the body. Manipulation of another's body structure including bones and joints, soft tissue, circulatory, and lymphatic systems are found in such disciplines as chiropractic spinal and joint manipulation, osteopathic manipulation of joints and soft tissue, massage therapy such as lymphatic drainage, deep and connective tissue manipulation such as Rolfing, and stimulation of specific points such as reflexology and acupressure. Active movement disciplines that focus on reducing pain through improving movement functioning use practitioners' guidance through hands-on feedback or verbal instruction as is found in Movement Therapies such as the Alexander Technique, Feldenkrais, Laban Movement Analysis, and others.

Energy medicine: Energy-focused practices that involve connecting with and balancing energetic fields that purportedly surround and penetrate the human body (e.g., Qi gong, Reiki, Therapeutic touch).

Whole Medical Systems: Traditional medicine systems based upon comprehensive systems of theory and practice for improving overall health and correcting health imbalances that focus on both improving overall lifestyle (diet exercise, social and emotional functioning), and specific methods of herbal and somatic interventions, such as Ayurvedic Medicine, Traditional Chinese Medicine (including acupuncture), and naturopathy (which combines disciplines from the above categories).

RECOMMENDATIONS

1. There is insufficient evidence to recommend CAM approaches as first line treatments for PTSD. [I]
2. CAM approaches that facilitate a relaxation response (e.g. mindfulness, yoga, acupuncture, massage, and others) may be considered for adjunctive treatment of hyperarousal symptoms, although there is no evidence that these are more effective than standard stress inoculation techniques. [I]
3. CAM approaches may be considered as adjunctive approaches to address some co-morbid conditions (e.g. acupuncture for pain). [C]
4. CAM may facilitate engagement in medical care and may be considered in some patients who refuse evidence-based treatments. However, providers should discuss the evidence for effectiveness and risk-benefits of different options, and ensure that the patient is appropriately informed.

DISCUSSION

Surveys of CAM utilization (meditation, yoga, massage, and deep breathing exercises) among the general US population indicate significant increases in acceptance of these practices over the past decade (Barnes et al., 2008). A recent White House Commission report on CAM highlighted the need for continued rigorous research regarding these approaches (White House Commission, 2002).

Although Complementary and Alternative Medicine (CAM) approaches to the treatment of many medical and mental health diagnoses, including PTSD, are in widespread use, the research base to support their effectiveness is far from complete. Evidence for their use for PTSD is sparse, yet numerous CAM modalities have been shown to be effective for symptomatic relief related to insomnia, anxiety, pain (AHRQ, 2009), and various somatic presentations associated with PTSD.

F1. Natural Products (Biologically Based Practices)

Herbal (phytotherapy) and dietary supplements have been used for the treatment of PTSD. Herbs and supplements are believed to boost health functioning through micronutrients that are directly used by body tissues, either targeting a specific organ or system, or through balancing systems that interact with each other. Although individual consumers may purchase individual herbs or vitamins, practitioners typically recommend combinations based upon both the suspected pathology as well as the patient in order to boost their host resistance. An example of specific over-the-counter supplements is omega-3 fatty acid docosahexaenoic acid (DHA), that affects catecholamines and proinflammatory cytokines, and that has been shown in several RTCs to decrease the perception of stress (Bradbury, 2004), improve mood (Lin & SU, 2007; Mischoulon et al, 2009), and decrease symptoms of ADHD in children (Johnson et al., 2009; Sinn & Bryan, 2007).

Herbal remedies such as Kava Kava have been shown to reduce anxiety (Pitler & Ernst, 2003), while others (valerian root, typically in combinations of herbs) has been shown to improve sleep (Bent et al., 2006). St. John's Wart has also been used to treat mild depression with some benefit compared to placebo (Linde, Berner, & Kriston, 2008). Although patients frequently prefer phytotherapy over prescription medication, often claiming fewer side effects, herbal benefits are typically not as effective as prescription medications, their safety has been questioned, and these have not been well studied in

patients specifically diagnoses with PTSD. Natural precursors to Serotonin and GABA sold over the counter have also shown reductions in anxiety, yet also not within the context of PTSD.

Homeopathic theory is entirely different from herbal medicine and supplements, although both are widely utilized throughout the world. Samuel Hahnemann (Hahnemann, 1996) described how substances that in larger quantities acted as a toxin, in specifically prepared microdoses served to stimulate the body's immune system to repel those symptoms that arise in consort with exposure to a toxin. Each toxic substance known to man has its symptom picture, and therefore a homeopathic preparation of that toxin is thought to stimulate the body to overcome those symptoms. A homeopathic practitioner takes an extensive history in order to best understand which single remedy (or in some cases combinations of remedies) best accounts for the cluster of symptoms, and therefore would be most optimal for stimulating the body's defenses against that symptom cluster. There are several RCT studies for anxiety, sleep, and pain in medical journals, but nothing directly for PTSD or in the context of PTSD. Moreover, there is a great deal of controversy regarding the research on homeopathic efficacy, with most studies failing to find an overall benefit (Linde, Jonas, Melchart, & Willich, 2001).

Although there have been some studies of their effectiveness for addressing some components of PTSD, the results of this body of research provides insufficient evidence to draw firm conclusions about their direct effectiveness for PTSD. In addition, the quality and purity of herbals and dietary supplements available in the United States vary widely, further complicating their study and use.

F2. Mind-Body Medicine

Often referred to as “Mind-Body” approaches to health and well-being, methods such as meditation, yoga, and Tai Chi have been used for thousands of years by Eastern religious traditions for spiritual development. They share a common goal of enlightenment – that is, experiencing existence “as it is” prior to our conceptual biases stemming from our needs, fears, and desires. Traditional practice involves developing the ability to become fully immersed in the moment at hand, without cognitive reflection or pursuing or reacting to one's fears or desires. This practice allows one to break out of habitual cognitive and behavioral patterns and become more open and responsive to the situation at hand. It is also thought to lead to a more harmonious mental and physical state of being. However, in the alternative healing culture of modern Western society, these traditional practices have been taken out of their original religious context and greatly simplified to appeal to modern social interests. Several meta-analyses and reviews have shown physical and psychological health benefits from Meditation, Yoga, and Tai Chi. However there is a lack of rigorous RCTs and head to head comparisons of these approaches compared to other interventions for mental health benefits (Ospina, 2007).

Meditation and relaxation techniques, based upon Buddhist meditation practices such as Zen or Vipassana, have been adapted in the West to assist with specific concerns such as anxiety and pain. One such approach, Mindfulness Based Stress Reduction, combines elements of yogic relaxation techniques and Buddhist awareness enhancement in a simple, concrete, and brief structured format that is easy for someone not steeped in Eastern traditions to learn. Transcendental Meditation™, based on Yogic traditions, has been used to treat anxiety and depression in Vietnam veterans (Brooks 1985). There is a growing literature of RCTs showing meditation to be effective for enhancing attention, reducing anxiety and stress, improving sleep, and helping to manage pain (Grossman, Niemann, Schmidt, & Walach, 2004; Kabat-Zinn, Lipworth, & Burney, 1985; Davidson et

al, 2003). However, there is no published RCT in support of the use of meditation for PTSD per se.

Yoga is really a collection of practices to assist one to become “yoked with God.” Although there are several Ashrams that emphasize this collection of practices for spiritual enhancement, for the most part, “yoga” is synonymous in the West with Hatha-style Yoga. Hatha Yoga is a series of poses that help stretch muscles, improve tone and alignment, and teach one to breathe into and release one’s discomfort. Other types of yoga, such as Pranayama breathing techniques or the restorative and recuperative Yoga Nidra approach, are typically employed as part of Hatha Yoga classes in the West. Many RCTs have been conducted showing the value of yogic practices for improving sleep and reducing anxiety and stress (Kirkwood, tai Rampes, Tuffrey, et al, 2005; Sarang & Telles, 2006). However, there are currently no RCTs published in support of the use of yoga for PTSD per se.

Tai Chi Chuan (literally translated as “Grand Ultimate Fist”) was initially developed as a highly effective martial art. However, two hundred years ago a version was created that could be widely practiced by the general populous in order to improve physical health and mental well-being. The series of slow continuous movements synchronized with the expansion and contraction of one’s breath, is believed to harmonize mind and body in harmony with one’s surroundings. Stemming from the Taoist tradition to enhance health and foster a sense of unity with mind, body, and nature, Chi Kung (also transliterated as Qi Gung), is a series of exercises that include breath and movement. Adopted as part of the Traditional Chinese Medical Model, Chi Kung Exercises are said to help balance and circulate the “chi” (life-energy). Several RCTs have shown Tai Chi (Jin, 1989), and Chi Kung to be effective in improving a sense of calm and well-being, improve sleep, and improve physical health (Wang, Bannuru, Ramel, Kupelnick, et al, 2010). However, the evidence for benefits of Tai Chi compared to regular exercise is lacking.

F3. Manipulation and Body-Based Practices (Exercise and Movement)

Although hardly fitting the definition of a CAM modality, exercise used for psychological well-being is outside of the standard of practice for psychotherapy. However, exercise has been advocated as an integrative approach in the prevention and treatment of PTSD and other combat-related mental health problems. Wald and Taylor (2008) examined the relationship between baseline physical fitness and the development of PTSD symptoms (as measured by the Impact of Event Scale) in a group of 31 soldiers undergoing military survival training. They found that higher levels of pre-study physical fitness were inversely related to both trait anxiety levels and IES scores. Studies have shown that pre-trauma levels of exercise tend to decline after developing PTSD (de Assis et al., 2008). Aside from PTSD, depression was a frequent condition for which exercise therapy was applied. The majority of reviewed studies utilized an aerobic exercise regimen—e.g., walking, running, stationary cycling (Diaz & Motta, 2008; Manger & Motta, 2005). One study emphasized the importance of participant selection of the specific type of exercises that would constitute their treatment (Donta, et al, 2003). The studies reviewed here utilized both group and individual exercise formats. All studies demonstrated either a reduction in symptoms from baseline PTSD measures or relative to a placebo or control group, but the effects were generally modest and did not always extend to other mental health disorders, such as anxiety and depression. A primary methodological limitation of the papers reviewed here is that exercise interventions were rarely conducted in isolation from other psychotherapeutic approaches.

Massage and skeletal manipulation has long been used for reducing the ill effects of physical and mental stress. Deprivation of touch has been seen as problematic for infants, and massage adherents claim that adults as well benefit from non-sexual

massage-style contact. In addition, Swedish-style massage targets the lymphatic system as well as intending to help relax large surface musculature. Deep Tissue and Sports Massage targets deeper skeletal musculature and connective tissue to correct structural imbalances. Many studies have shown the value of such approaches for at least transient stress and pain reduction and in support of sleep and anxiety. However, no research has demonstrated that these modalities are effective for PTSD per se.

F4. Energy medicine

There are a variety of CAM systems where a practitioner helps a patient to correct energy imbalances in their bodies. Practitioners place their hands over or directly upon various energy foci, and attempt to shift excess energy to deficient areas (Yogic Chakra-based approaches), and remove blockages (Traditional Chinese Medicine Chi-based approaches). Acupressure and Shiatsu are mostly based on Traditional Chinese Medicine, but use pressure on specific acupuncture points rather than needles. Reiki and Healing Touch are more energy based, and often the practitioner places their hands above the body of the client, sensing the energy and attempting to allow the energy areas to come into a balance. Chi Kung (Qi Gung) can be utilized by a Chi Kung master trained in Traditional Chinese medicine to assist another person. Many hospitals in China have departments of Traditional Chinese Medicine which include a Chi Kung Master who attempts to balance the chi in the patient by either direct hands-on methods or sitting nearby and placing the hands toward the patient.

Reiki and *Johrei* are both energy medicine techniques that originated in Japan. In *Reiki*, the practitioner places his hands on or near the person receiving treatment with the intent to transmit *ki*, believed to be life-force energy. *Johrei*, a form of energy healing that originated in Japan, involves the practitioner facing the person receiving the treatment, where “spiritual energy” is transmitted through the practitioner (Brooks, et al., 2006).

There are no current controlled studies examining *Reiki* or *johrei* in patients with PTSD or Acute Stress Disorder. A small number of low-quality studies have been conducted, showing positive improvement in conditions commonly co-morbid with PTSD, such as depression (Collinge, Wentworth, and Sabo, 2005) or anxiety (Brooks et al., 2006).

A recent systematic review of randomized clinical trials of *Reiki* noted that the currently available RCTs are “scarce” and lack independent replication (Lee, Pittler, and Ernst, 2008). The studies that exist suffer from methodological flaws related to sample size, inadequate design, and poor reporting.

F5. Whole Medical Systems

There are two major comprehensive traditional medical systems, and several minor medical systems that integrate lifestyle and intervention across multiple dimensions. Traditional Chinese Medicine utilizes nutrition, exercise, emotional balance, massage, herbs and acupuncture to restore balance to the body in relationship to one's environment. Chinese medicine has a sophisticated system of diagnosis through assessment of various combinations of pulses, and other physical and mental signs and symptoms. Traditionally, specialists focus on herbal treatment, acupuncture treatment, massage or Chi Kung. However, Western schools teach a combination of these and modern practitioners in the United States typically focus on lifestyle, acupuncture and herbal treatments. Ayurvedic Medicine also emphasizes a healthy lifestyle, including diet and yoga, and offers supportive intervention through expunging toxins, tonifying, and balancing, primarily through herbal treatments. Less popular and less extensively developed systems include traditional healing systems from almost every culture on

earth such as Native American healing traditions, that also focus on living in harmony with one's environment, supported by spiritual healers and herbal remedies. Although there is a great deal of research conducted on aspects of these healing systems (such as acupuncture, or the use of herbs), assessment of comprehensive systems are difficult to study, and lacking in the literature, especially with regard to mental health in general, and PTSD in particular.

F6. Other Approaches

Animal-Assisted Therapy (AAT)

AAT is a goal-directed intervention in which an animal that meets specific criteria is an integral part of the treatment process. AAT is delivered and/or directed by a health/human service provider, working within the scope of his or her profession. AAT is designed to promote improvement in human physical, social, emotional, and/or cognitive functioning. AAT is provided in a variety of settings and may be group or individual in nature. Commonly used animals include dogs and horses. There are a growing number of programs throughout the United States that utilize animals as part of PTSD treatment, including programs specifically for veterans. There are two major approaches to AAT. One simply offers the opportunity to bond with an animal. The other is more structured and occurs within a therapeutic environment. AAT for those suffering from PTSD often ask the patient to engage non-verbally with one or more animals in a structured activity, such as approaching the animal in a safe manner that engages rather than frightens them and lead them through an obstacle course without touching them. This requires developing trust, rapport, and non-verbal communication. Evidence of AAT for PTSD is ongoing but at this point lacks support.

Module I-3. MANAGEMENT OF SPECIFIC SYMPTOMS

This section includes recommendations regarding treatment interventions for a selected list of physical symptoms that are common in patients presenting with post-traumatic stress symptoms.

Survivors of trauma may not complain directly of PTSD symptoms, such as re-experiencing or avoidance. Instead, they may complain of sleeping problems. When seeking to identify PTSD, providers should consider asking specific questions about sleep problems, (including flashbacks and nightmares), pain (including musculoskeletal, headache), or hyperarousal (including an exaggerated startle response or sleep disturbance). Many individuals with PTSD experience sleep disturbances (trouble falling asleep or problems with waking up frequently after falling asleep). Chronic pain and insomnia often occur simultaneously, with the vast majority of chronic pain patients complaining of interrupted or poor quality sleep. When a person with PTSD experiences sleep disturbances, using alcohol as a way to self-medicate becomes a double-edged sword. Excessive alcohol use can impair one's ability to sleep restfully and to cope with trauma memories and stress. The need to improve sleep in these patients is clear, given increasing evidence that sleep disturbance is associated with heightened pain sensitivity and elevated disability.

Chronic pain is frequently observed in patients with PTSD and is often associated with a significant level of affective distress and physical disability. Chronic pain may develop because of an injury sustained in a traumatic event, such as a motor vehicle accident, work-related injury, or injury in military combat. Patients with chronic pain, particularly headache disorders and fibromyalgia (FM), associated with psychological traumas need a special management strategy. Diagnosis of headache disorders and FM in traumatized patients and obtaining the clinical history of a traumatic event or diagnosing PTSD in chronic pain patients are of great importance.

A. Sleep Disturbances**BACKGROUND**

Many patients with PTSD have had insomnia for years, including broken sleep, frequent awakenings, and nightmares, all of which contribute to poor sleep quality. Hyperarousal behaviors, part of PTSD symptoms for many people, can be stronger at night and contribute to insomnia. Sleep problems in traumatized patients may also reflect co-morbid conditions, some of which may be of new-onset (pain may be prominent among these).

There is no evidence to suggest that insomnia, as a component of traumatic stress reactions, should be managed differently than insomnia associated with other conditions. Clinical experience does, however, show that some psychologically traumatized patients dread sleep because of intense nightmares.

Research demonstrates that non-pharmacological sleep strategies yield outcomes equal or superior to those obtained with hypnotics alone or hypnotics combined with non-pharmacological strategies. Long-term outcomes are better following non-pharmacological interventions. The aim of sleep management is to establish a regular, normalized sleep-wake pattern.

RECOMMENDATIONS (BASED ON CONSENSUS OF THE WORKING GROUP CLINICAL EXPERTS)

Sleep Disturbance

1. Encourage patients to practice good sleep hygiene, including:
 - Restricting the night-time sleep period to about eight hours
 - Waking at a regular time
 - Arising from bed at a regular time
 - Avoiding going to bed too early
 - Avoiding alcohol
 - Avoiding stimulants, caffeinated beverages, power/energy drinks, nicotine, and over-the-counter medications
 - Avoiding stimulating activities, light, noise, and temperature extremes before bedtime (e.g., exercise, video games, T.V.) or in the sleeping area
 - Reducing (to less than 30 minutes), or abolishing, daytime naps
 - Practicing relaxation techniques
 - Engaging in moderate exercise, but not immediately before bedtime
2. Offer Cognitive Behavioral Therapy for Insomnia, which may include:
 - Educating about proper sleep habits and sleep needs
 - Correcting false and unrealistic beliefs/concerns about sleep
 - Identifying and addressing anxious, automatic thoughts which disrupt sleep
3. Consider adjunctive therapy for nightmares using prazosin. [B]
4. Any significant change in sleep patterns should trigger clinical reassessment in order to rule out worsening or new onset of co-morbid conditions

Insomnia

1. Monitor symptoms to assess improvement or deterioration and reassess accordingly.
2. Explore cause(s) for insomnia, including co-morbid conditions.
3. Begin treatment for insomnia with non-pharmacological treatments, including sleep hygiene and cognitive behavioral treatment (see recommendation for Sleep Disturbances).
4. The selection of sleep agents for the treatment of insomnia in PTSD patients may be impacted by other treatment decisions (e.g., medications already prescribed for the treatment of PTSD, depression, TBI, pain, or concurrent substance abuse/withdrawal) and social/environmental/logistical concerns associated with deployment.
 - a. **Trazodone** may be helpful in management of insomnia and may also supplement the action of other antidepressants.
 - b. **Hypnotics** are a second-line approach to the management of insomnia and should only be used for short periods of time. Should hypnotic therapy be indicated, the newer generation of non-benzodiazepines (e.g.

zolpidem, eszopiclone, ramelteon) may have a safety advantage by virtue of their shorter half-life and lower risk of dependency. Patients should be warned of and monitored for the possibility of acute confusional states/bizarre sleep behaviors associated with hypnotic use.

Benzodiazepines can be effective in chronic insomnia but may have significant adverse effects (confusion, sedation, intoxication) and significant risk of dependency.

- c. **Atypical antipsychotics** should be avoided due to potential adverse effects but may be of value when agitation or other symptoms are severe.
- d. If nightmares remain severe, consider adjunctive treatment with **prazosin [B]**
- e. If symptoms persist or worsen, refer for evaluation and treatment of insomnia

Additional information of management of insomnia can be found in:

VHA Pharmacy Benefit Management (PBM) guideline for Insomnia:

<http://www.pbm.va.gov/ClinicalRecommendations.aspx>

Sleep Hygiene Patient Education

- Avoid or limit caffeinated products, nicotine, and alcohol, especially later in the day.
- Avoid drinking excess liquids after supper to avoid having to get up during the night to go to the bathroom.
- Avoid or limit daytime naps to 30 minutes in the early afternoon before 3:00 pm.
- Go to bed only when sleepy. Sleep only as much as needed to feel refreshed. Staying in bed longer can result in fragmented/shallow sleep on following nights.
- Create a dark, quiet, temperature-controlled bedroom (e.g., change the number of blankets you use; use earplugs; close the door if noisy).
- Avoid heavy meals within 2 hours of bedtime; a light snack might help if hungry.
- Maintain a regular daily schedule of activities, including bedtime and awakening times, 7 days/week. Use an alarm clock if needed.
- Exercise regularly during the daytime. Avoid active exercise in the late evening when it is close to bedtime.
- Use the bed and bedroom only for sleeping or sexual activity. Do not eat, work, or watch television while in bed.
 - If you cannot sleep, if possible, get out of bed and go to another room; read or engage in other quiet activities; or do other relaxation activities before attempting to sleep again. Return to bed only when sleepy Repeat if necessary. Do not watch the clock; turn the clock around or cover it up
- Solve problems before retiring. If not possible, write down your worries, plans, and strategies during the early evening and not at bedtime.
- Correct extrinsic factors, such as environmental disruption (e.g., pets or snoring partner).
- Establish a “wind-down” routine going to bed and develop and maintain bedtime “rituals” that make going to sleep a familiar routine; for example:
 - Set time to relax before bed with 20-30 minutes of relaxation (e.g., soft music, meditation, breathing exercises)
 - Take a warm bath
 - Have a light snack, which could include: warm milk, foods high in tryptophan, such as bananas, carbohydrates, which can help induce sleep

Adapted from Petit L, et al. *Age Ageing* 2003; 32: 22. Wilson S. and Nutt D. *Prescriber* 2005; 19: 29-41 Wolkove N, et al. *CMAJ* 2007; 176: 1449-54.

DISCUSSION***Use of Benzodiazepines for Sleep Disturbance***

In a small, double-blind, placebo-controlled temazepam trial in acute accident/injury victims at a trauma center (Mellman et al., 2002), temazepam 30 mg was administered for 5 nights, tapered for 2 nights, then discontinued. At the 6-week follow-up, 6/11 temazepam subjects and 3/11 placebo subjects met PTSD symptom criteria. Sleep improvement was noted, however, for the duration of the trial. However, in a small randomized, controlled trial, alprazolam did not have substantial benefit for PTSD or for nightmares, although it did improve anxiety (Braun, 1990). In another small single-blind controlled study, clonazepam did not demonstrate significant benefit for sleep difficulties, including nightmares (Cates, 2004).

An argument can be made for short-term use of a benzodiazepine for the purpose of reducing hyperarousal symptoms in the immediate trauma aftermath, in order to help

normalize sleep cycles and minimize anxiety. Longer-term use of benzodiazepines, however, should be avoided, as the limited data available show that prolonged use of benzodiazepines (1-6 months in duration) is associated with a higher rate of subsequent PTSD (Gelpin et al., 1996).

Benzodiazepines use should be considered relatively contraindicated in combat veterans with PTSD because of the very high co-morbidity of combat-related PTSD with alcohol misuse and substance use disorders (upwards of 50 percent of co-morbidity) and potential problems with tolerance and dependence. Once initiated in combat veterans, benzodiazepines can be very difficult, if not impossible, to discontinue, due to significant withdrawal symptoms compounded by the underlying PTSD symptoms.

Other agents that have improved insomnia are trazodone, mirtazapine, and olanzapine. There are no trials of non-benzodiazepine hypnotics in the treatment of sleep disorders associated with PTSD.

Use of Prazosin for Sleep Disturbance

Five publications (Raskind 2000, 2002, 2003; Taylor 2006 & 2008) that examined the role of antiadrenergic medications, commonly used for treating hypertension, in the treatment of post-traumatic stress disorder (PTSD) were identified in the peer-reviewed literature.

Although Taylor et al. (2006) and Raskind et al. (2003) were excluded from the analyses (due to the small number of subjects that did not meet inclusion criteria), both have shown positive results in reducing psychological distress, specifically to trauma cues (Taylor et al., 2006). Patients taking prazosin showed significant improvement on the Clinician-Administered PTSD Scale (Raskind, 2003).

Raskind et al. (2007) evaluated prazosin effects on trauma nightmares, sleep quality, global clinical status, dream characteristics, and co-morbid depression. Forty veterans (mean age 56 +/- 9) with chronic PTSD and distressing trauma nightmares and sleep disturbance were randomized to evening prazosin (13.3 +/- 3 mg/day) or placebo for 8 weeks. In the evaluable sample (n = 34), primary outcome measures demonstrated that prazosin was significantly superior to placebo for reducing trauma nightmares and improving sleep quality. Prazosin shifted dream characteristics from those typical of trauma-related nightmares toward those typical of normal dreams.

Taylor et al. (2008) was a double blind, placebo-controlled cross-over study of 13 civilians with trauma-related PTSD. Prazosin was rapidly titrated to 3 mg/night during each 3-week treatment phase. Prazosin, compared with placebo, significantly increased total sleep time by 94 min ($p < 0.01$), and total rapid eye movement (REM) sleep and mean REM duration were also longer with prazosin. Reductions in trauma nightmares, total PTSD symptoms (using the PCL-C), and CGIC scores were significantly changed compared with placebo.

The results of these studies were consistent and positive, suggesting that prazosin therapy is safe and is associated with reduction of nighttime symptoms of PTSD. Prazosin is an effective and well-tolerated treatment for trauma nightmares, sleep disturbance, and global clinical status in veterans with chronic PTSD.

Ruff and colleagues (2009) found in an observational study that prazosin combined with sleep hygiene counseling was an effective initial treatment for a group of OIF/OEF veterans (n=74) with headaches associated with histories of mild TBI from exposure to an explosion in combat and with PTSD. Prazosin was well tolerated. Nine weeks after providing sleep counseling and initiating an increasing dosage schedule of prazosin at bedtime, 65 veterans had reduced headache intensity and frequency, reduced daytime

sleepiness, and improved cognitive performance. These gains were maintained 6 months later.

Sleep hygiene counseling is beneficial in terms of improving sleep duration and reducing the time it takes for a person to fall asleep (Morin et al., 1999). By blocking nightmares in people with PTSD, prazosin prolongs sleep duration by preventing sleep interruptions. Thus, the two interventions may have synergized, with sleep hygiene counseling reducing the time it took for veterans to fall asleep and prazosin prolonging sleep.

A systematic review by Dierks et al. (2007) did not find any additional publication to the above. The authors concluded that despite various limitations, all of the studies showed significant improvements in the sleep-related symptoms of PTSD following the addition of prazosin therapy, based on the Clinician-Administered PTSD Scale recurrent distressing dreams item and the Clinical Global Impression of Change scale.

EVIDENCE TABLE

	Evidence	Source	LE	QE	NB	SR
1	Prazosin improved sleep quality, reduced trauma nightmares	Dierks et al., 2007 § Raskind et al., 2002, 2007 Taylor et al., 2008	I	Good	Mod	B
2	Benzodiazepines for sleep disturbance, insomnia	Gelpin et al., 1996 Mellman et al., 1998	II-2	Fair	Small/ Neg	C

LE = Level of Evidence; QE = Quality of Evidence; SR = Strength of Recommendation; NB = Net benefit (see Appendix A)

Table I - 11 Pharmacological Studies - Prazosin for Sleep Disturbances

Author, Year	Results	n	Trauma	LE	QE	NB
Raskind et al., 2002	Significant improvement in dream scores after 8 weeks of prazosin	59	Retrospective study - Veterans	II-2	Poor	Mod
Raskind et al., 2003	Significant improvement, CAPS, CGI. Prazosin > placebo	10	Veterans	I	Poor	Mod
Raskind et al., 2007	No difference	34	Veterans	I	Good	Mod
Taylor et al., 2006	Reduction in global PTSD illness severity	11	Civilian	II	Poor	Mod
Taylor et al., 2008	Reductions of nighttime, significantly increased total sleep time	13	Civilian	I	Fair	Mod

LE = Level of Evidence; QE = Quality of Evidence; NB = Net benefit (see Appendix A)

B. Pain

BACKGROUND

There is a growing body of research that indicates clearly that PTSD and chronic pain frequently co-occur. People with both PTSD and chronic pain tend to have greater distress and impairment compared to those with only one of these conditions, and assessment and treatment are more complicated. It is therefore important to include a pain assessment (acute or chronic) in the examination of patient with ASD or PTSD, and to consider the extent to which PTSD symptoms may be influenced by pain or the extent to which pain symptoms are being exacerbated by PTSD.

Certain types of chronic pain are more common in individuals who have experienced specific traumas. Among adult survivors of physical, psychological, or sexual abuse the most common forms of chronic pain involve: pain in the pelvis, lower back, face, and bladder; fibromyalgia; interstitial cystitis; and non-remitting whiplash syndromes. Chronic pain is a common problem among returning soldiers. In service persons from OEF/OIF, head, neck, back, shoulder, and knee pain have been found to be most common (Lew, 2009). Co-morbidity of physical and emotional problems; and in particular the combination of chronic pain, PTSD symptoms, and post-concussion syndrome (PCS); is unique to the OEF/OIF population and appears to be more common in blast-injured patients and may be more difficult to treat than each condition independently.

Understanding the development and maintenance of chronic pain and PTSD and how they interact is of essential importance and is often overlooked in practice. Fear-based avoidance is a central theme in both PTSD and chronic pain. While the underlying basis for the avoidance may differ, avoidance behaviors may exacerbate or maintain the severity of either or both conditions. Although pharmacological agents have been examined in the treatment of pain and PTSD individually, little is known regarding the relationship of medication use with functioning in patients with co-morbid conditions. Pain should be assessed and aggressively treated in early phases of post-trauma, and providers across disciplines need to work together to develop treatments that are complementary, based on theory, and supported by empirical evidence.

RECOMMENDATIONS (BASED ON CONSENSUS OF THE WORKING GROUP CLINICAL EXPERTS)

1. Recommend pain assessment using a '0 to 10' scale.
2. Obtain a thorough biopsychosocial history and assess for other medical and psychiatric problems, including risk assessment for suicidal and homicidal ideation and misuse of substances, such as drugs or alcohol and over-the-counter and prescription drugs or narcotics.
3. Assessment should include questions about the nature of the pain and likely etiology (i.e., musculoskeletal and neuropathic), locations, quality, quantity, triggers, intensity, and duration of the pain, as well as aggravating and relieving factors.
4. Assessment should include evaluation of the impact of pain on function and activities, pain-related disability, or interference with daily activities.
5. Assessment should include the identification of avoidance behaviors that contribute to emotional distress and/or impaired functioning.
6. Management of pain should be multidisciplinary, addressing the physical, social, psychological, and spiritual components of pain in an individualized treatment plan that is tailored to the type of pain. [C]

7. Selection of treatment options should balance the benefits of pain control with possible adverse effects (especially sedating medications) on the individual's ability to participate in, and benefit from, PTSD treatment. [I]
 8. Musculoskeletal pain syndromes can respond to correcting the underlying condition and treatment with non-steroidal anti-inflammatory drugs (NSAIDs).
 9. When appropriate, recommend use of non-pharmacological modalities for pain control, such as biofeedback, massage, imaging therapy, physical therapy, and complementary alternative modalities (yoga, meditation, acupuncture). [C]
 10. Centrally acting medications should be used in caution in patients with PTSD, as they may cause confusion and deterioration of cognitive performance and interfere with the recovery process.
 - a. If required, lower doses of opioid therapy or other centrally acting analgesics should be used for short duration with transition to the use of NSAIDs. [C]
5. Consider offering Cognitive Behavioral Therapy, which may include:
- b. Encouraging increasing activity by setting goals
 - c. Correcting false and unrealistic beliefs/concerns about pain
 - d. Teaching cognitive and behavioral coping skills (e.g., activity pacing)
 - e. Practicing and consolidation of coping skills and reinforcement of use

DISCUSSION

Prevalence

PTSD and chronic pain disorder are highly co-morbid (Sharp, 2001). The literature indicates a high degree of co-occurrence between pain and PTSD, regardless of whether the pain is being assessed in patients with PTSD or PTSD is being assessed in patients with chronic pain. Chronic pain and PTSD are frequently observed to be co-morbid following traumatic injury (Bryant et al., 1999; Hickling and Blanchard, 1992). Studies have shown that PTSD symptoms tend to be elevated in patients with chronic pain and fibromyalgia (Amir, 1997; Engel, 2000; Sherman, 2000), chronic low back pain, and other musculoskeletal disorders (Sherman, 2000).

Sharp (2004) described four studies of patient populations that were drawn from MVA victims, combat veterans, fire fighters, and chronic pain clinic patients. In each instance, they found a high prevalence of pain in patients diagnosed with PTSD or a high prevalence of PTSD in patients diagnosed with chronic pain. Schwartz et al. (2006) noted that between 10 percent and 50 percent of patients treated in tertiary care settings for chronic pain and related conditions have symptoms that meet criteria for PTSD. Muse (1986) reported that 9.5 percent of a sample of patients attending a multidisciplinary chronic pain center met criteria for "post-traumatic pain syndrome."

Norman et al. (2007, 2008) found that self-reported pain levels within 24-48 hours after serious injury were significantly and strongly associated with the subsequent risk of PTSD. The author suggests that high levels of peri-traumatic pain could be used to identify individuals at elevated risk for PTSD following traumatic injury. Similarly, in a study of 2931 seriously injured patients admitted to acute care hospitals in the United States, Zatzick and Galea (2007) found that pain after injury was significantly associated with an increased risk of PTSD one year after hospitalization. The prevalence of PTSD is particularly high when the chronic pain results directly from a traumatic event (Hickling & Blanchard, 1992; Taylor & Koch, 1995; Chibnall, 1994; Asmundson et al., 1998; Otis

et al., 2003), and the presence of both PTSD and chronic pain can increase the symptom severity of either condition (Otis, 2003).

Beckham (1997) reported that 80 percent of combat Vietnam veterans with PTSD who completed self-report questionnaires assessing PTSD reported the presence of a chronic pain condition. Increased levels of PTSD re-experiencing symptoms were associated with increased pain level and pain-related disability.

The co-occurrence of chronic pain and PTSD has implications for the experience of both conditions. Persons with co-morbid pain and PTSD may experience less symptom improvement after treatment for these conditions (Asmundson, 2002; Baker et al., 1997; Clark et al., 2009; Hickling, 1992; McClean, 2005; Muse, 1986). Patients with chronic pain related to trauma or PTSD experience more intense pain and affective distress (Geisser, 1996), higher levels of life interference (Turk et al., 1996), and greater disability than pain patients without trauma or PTSD (Sherman, 2000).

Co-morbidity of Pain and PTSD (and PCS) in OEF/OIF

Because of the nature of injuries and the physical demands of OEF and OIF deployments, there are data to suggest that a significant majority of returned warriors report ongoing pain problems (Clark, 2004; Clark et al., 2009a; Gironde et al., 2006; Kalra et al., 2008).

Post-traumatic headaches are a common complaint (Gironde et al., 2009; Clark et al., 2007; Gironde et al., 2006; Lew et al., 2007; Ruff et al., 2008). Other commonly reported pain problems are low back pain and joint pain (Clark et al., 2007; Clark et al., 2009a). The high prevalence of chronic pain (pain that lasts longer than 3 months) places OEF/OIF soldiers at long-term risk for impaired functional ability, significant emotional distress, interpersonal conflict, substance misuse, and vocational limitations. Substance misuse (including opioid medications) has also been found in OEF/OIF returnees, although at lesser prevalence than pain (published rates range from 3 to 28 percent) (Clark et al., 2007; Kalra et al., 2008; Kang & Hyams, 2007; Shipherd et al., 2007).

Pain symptoms are a common complaint among post-deployment populations (back pain and headache). In one study of 1800 OEF/OIF veterans, 46.5 percent reported some pain, with 59 percent of those exceeding the VA clinical threshold of ≥ 4 on a 0-10 pain scale (Gironde et al., 2006). Recent literature suggests that many returning service members have multiple co-morbid symptoms of post-concussion syndrome, chronic pain, and PTSD (Clark et al., 2007; Clark et al., 2009; Lew et al., 2009; Sayer et al., 2008). In a sample of OEF/OIF veterans, pain was the single most common complaint recorded, and 42 percent of the sample reported concurrent PCS, chronic pain, and PTSD symptoms.

"The mechanism by which chronic pain and PTSD (and Post-Concussion Syndrome) interact is still unclear. Researchers evaluating co-morbid pain and PTSD have presented a variety of models to explain this phenomenon, including a Shared Vulnerability model, a Mutual Maintenance model, and a Triple Vulnerability model (Asmundson et al., 2002; Otis et al., 2003; Sharp & Harvey, 2001). These models propose mechanisms of interaction via the dispositional tendency to be fearful or anxious, the belief that anxiety states cause harmful consequences, and the cognitive distortions and behavioral patterns of PTSD and chronic pain that maintain or exacerbate symptoms of the other syndrome. These models have yet to be fully tested, and there are no available outcomes data regarding the success of integrated treatment of co-morbid pain and PTSD symptoms (Otis et al., 2003). However, such research is now being conducted." (Otis, 2008) (Walker, 2010).

Pain & PTSD Sensitivity Assessment

Given the high rates of co-morbidity of chronic pain and PTSD, clinicians should assess for both disorders. Several well-validated self-report questionnaires are available to help determine a diagnosis and the severity of symptoms. Self-report measures of pain, including the 0 to 10 numerical pain rating scale, the McGill Pain Questionnaire, the West Haven-Yale Multidimensional Pain Inventory, or the Pain Outcomes Questionnaire, were developed and validated specifically for veterans.

Asmundson et al. (2002) recommended that clinicians who conduct diagnostic assessments of patients presenting with PTSD symptoms also screen for the presence of existing pain conditions, such as fibromyalgia or chronic musculoskeletal pain using a self-reported questions or a structured clinical interview format

Interdisciplinary Approach to Management

Only a few studies have reported the results of treatments designed to address co-occurring chronic pain and PTSD. Given the current state of the literature, few recommendations can be made regarding preferred treatment modalities for individuals with co-morbid pain and PTSD. Several authors support the use of a multidisciplinary treatment approach for patients with PTSD and chronic pain (Muse, 1986).

Given the broad range of emotional and physical symptoms characteristic of veterans with co-occurring PTSD, chronic pain, and possible PCS, an integrated treatment approach is required (Walker, 2010). Treatment goals need to be clarified (e.g., reduce symptom severity, increase occupational or interpersonal functioning, reduce ongoing use of healthcare services) (Clark, 2008).

The focus of the integrated approach should be on education and management of symptoms and reducing pain and suffering, improving function, and enhancing quality of life. The interventions and treatment modalities employed should follow the current evidence-based recommendations for PCS, chronic pain, and PTSD (see VA/DoD guidelines for mTBI/Concussion and the VHA National Pain Management Strategy [NPMS], 2003); the specific practice guidelines for managing acute and chronic pain associated with certain conditions, like low back pain (APS-AAPM, 2005; VHA/DoD, 2007); and the guideline for the use of opioids with chronic pain (VHA/DoD, 2010).

For the OEF/OIF population of returning soldiers, treatment should be individualized on an inpatient or outpatient basis, depending upon needs within the group and individual treatment formats. Treatment should be goal-oriented and time-limited, with increased patient function and independence as major goals (Clark, 2009).

Non-Pharmacological Treatment

Initial treatment of PTSD focuses on providing psychoeducation about the disorder. This may include specifically addressing how fears and avoidance of the trauma may serve to maintain the symptoms and decrease the ability to function. This may also include discussing how pain may serve as a trigger or reminder of the trauma and increase arousal, fear, and avoidance and thereby increase disability and pain (Sharp, 2004).

Non-pharmacological ways to manage chronic pain may include **Relaxation** (e.g., relax the locus of the pain problems by relaxing muscle tension), **Increasing Activity and Fitness** (e.g., gradual return to more normal levels of activities and slowly increase patient's stamina for physical activities), **Reducing Emotional Over-Reactivity** (e.g., practice specific methods of emotional reaction to stressful triggers); and **External Focusing / Distracting** (e.g., learn to shift and manipulate the focus of attention in a positive way, which will minimize the experience of the pain).

Complementary Alternative medicine - There are numerous interventions that are being used to help manage chronic pain, including breathing, muscle relaxation, visual imagery, music, cold/heat, stretching, massage therapy, stress management, acupuncture, acupressure, hydrotherapy, and others.

Tan et al. (2007) examined various CAM therapies for chronic pain. For example, heart rate variability (HRV) biofeedback (using a stress eraser portable biofeedback device that easily can be used by veterans at home for the purpose of increasing HRV) has been shown to be effective for reducing the symptoms of PTSD (e.g., Tan et al., 2009; Zucker, 2009) and for persistent pain associated with fibromyalgia (Hassett et al., 2007). Regulating heart rhythm coherence, using biofeedback devices that computes the heart rhythm patterns, has been shown to improve symptoms, such as depression, anxiety, panic disorder, and PTSD symptoms (McCraty, Atkinson, Tomasino, & Stuppy, 2001).

Pharmacotherapy

There are no studies evaluating the pharmacotherapy for acute dissociation or traumatic pain associated with ASR.

The most common first-line treatments for pain have traditionally been analgesics, which include opioids, NSAIDS (non-steroidal anti-inflammatory drugs), anti-epileptic drugs, and tricyclic antidepressants for neuropathic pain, and antidepressants that target the inhibition of norepinephrine reuptake (SNRIs). With respect to trauma exposure, some data suggest that pain patients with co-morbid PTSD use analgesic medications at higher rates than their non-PTSD counterparts ([Schwartz et al., 2006](#)).

Selective serotonin reuptake inhibitors (SSRIs) are recommended as the first-line pharmacological intervention for PTSD (see Intervention for PTSD— Module B). SSRIs also have been examined for use in the treatment of chronic pain, but support for their efficacy in this population is limited (see reviews by McCleane, 2008; Dworkin et al., 2007). Sedative and anxiolytic medications are sometimes prescribed to alleviate symptoms associated with both PTSD and chronic pain but are not recommended due to the addictive properties of many anxiolytic agents (American Psychiatric Association, 2004; Sanders et al., 2005). The relationship between these pharmacological agents and functioning among patients with co-morbid pain and PTSD has not been examined.

Opioid Therapy

While controversial, the use of opioid medications in the treatment of chronic, non-malignant pain has increased significantly over the past three decades (Caudill-Slosberg et al., 2004). The efficacy of opioids in alleviating acute pain is well established, but less is known regarding their utility in treating chronic pain or their relationship with patient functioning over extended periods of use (Ballantyne and Shin, 2008). Side effect profiles associated with opioid use – tolerance, physical dependence, cognitive impairment – often are cited as factors contributing to potential decreases in functioning (Ballantyne and Shin, 2008; Eriksen et al., 2006). Clinicians need to recognize the interrelationships of chronic pain, PTSD, and opioid use. The co-morbid psychiatric disorders are known to increase risk of abuse and dependency among persons with chronic pain (Edlund et al., 2007). Some data suggest that pain patients with co-morbid PTSD use analgesic medications at higher rates than their non-PTSD counterparts (e.g., Schwartz et al., 2006). It may suggest that the experience of pain in the present may be affected by previous emotional trauma and ongoing trauma-related stress disorders. Some findings suggest the possibility that long-term use of opioids may lead to opioid-induced hyperalgesia (Angst & Clark, 2006).

Given inconsistent findings regarding the efficacy of opioids for long-term pain control, potential for reductions in overall functioning, and the increased risk of abuse and

dependency, providers should consider the benefits and potential harm of extended opioid therapy for patients with chronic pain subsequent to traumatic injury (Clapp, 2010) (VA/DoD COT CPG, 2010).

Cognitive Behavior Therapy (CBT)

Cognitive behavioral therapy is recommended as first-line therapy for PTSD (see Intervention for PTSD Module B). CBT for pain uses a similar approach and a variety of techniques that are aimed at changing maladaptive thoughts and behaviors that serve to maintain and exacerbate the experience of pain. CBT for chronic pain involves teaching patients ways of safely reintroducing enjoyable activities into their lives.

Using components of cognitive processing therapy (CPT) for PTSD and cognitive behavioral therapy (CBT) for chronic pain management, a 12-session integrated treatment for veterans with co-morbid chronic pain and PTSD was developed (Otis, 2009). The key components of the CBT for chronic pain include cognitive restructuring (i.e., teaching patients how to recognize and change maladaptive thoughts), relaxation training (e.g., diaphragmatic breathing, progressive muscle relaxation), time-based activity pacing (i.e., teaching patients how to become more active without overdoing it), and graded homework assignments designed to decrease patients' avoidance of activity and reintroduce a healthy, more active lifestyle (Otis, 2007). The therapy includes weekly readings and homework assignments, pre- and post-treatment evaluations using measures of pain, PTSD, physical disability, and psychological distress.

The result of implementing the program in a pilot study demonstrates the importance of establishing participant trust and regular therapy attendance and addressing participant avoidance. Participants reported that they generally liked the format of treatment and appreciated learning about the ways that chronic pain and PTSD share some common symptoms and ways that the two disorders can interact with one another. The authors concluded, based on this initial small pilot study, that the participants appeared to benefit from receiving the integrated treatment for pain and PTSD (Otis, 2009).

C. Irritability, Severe Agitation, or Anger

BACKGROUND

In the most general sense, anger is a feeling or emotion that ranges from mild irritation to intense fury and rage. Anger is often a central feature of response to trauma and can be seen as a core component of the survival response in humans. Mismanaged or uncontrolled anger and rage can lead to a continued sense of being out of control and may cause conflicts in personal and professional relationships. Anger and irritability may be associated with domestic violence and abuse, road rage, and workplace violence, even if there is no intent to cause harm to others. It is important to distinguish between anger and aggression. Aggression is behavior that is intended to cause harm to another person or damage property. This behavior can include verbal abuse, threats, or violent acts. Anger, on the other hand, is an emotion and does not necessarily lead to aggression. Therefore, a person can become angry without acting aggressively.

Anger becomes a problem when it is felt too intensely, is felt too frequently, or is expressed inappropriately. Anger management interventions include a range of methods, including teaching individuals to recognize signs of becoming angry, self-calm, avoid escalating conflicts, and respond to anger-eliciting situations in more positive ways.

RECOMMENDATIONS (BASED ON CONSENSUS OF THE WORKING GROUP CLINICAL EXPERTS)

1. Assess the nature of symptoms, severity, and dangerousness. Consider using standardized Anger Scales, such as Spielberger's State-Trait Anger Expression Inventory, to quantify.
2. Explore for cause of symptoms and follow-up to monitor change.
3. Consider referral to specialty care for counseling or for marital or family counseling as indicated. Offer referral for:
 - a. Anger Management therapy
 - b. Training in exercise and relaxation techniques
4. Promote participation in enjoyable activities - especially with family/ loved ones.
5. Promote sleep and relaxation.
6. Avoid stimulants and other substances (caffeine, alcohol).
7. Address pain (see pain management).
8. Avoid benzodiazepines.
9. Consider SSRIs/SNRIs
 - a. If not responding to SSRIs/SNRIs and other non-pharmacological interventions, consider low-dose anti-adrenergics or low-dose atypical antipsychotics (risperidone, quetiapine).
 - b. If not responding or worsening, refer to specialty care.

DISCUSSION

In anger management treatments, physical arousal, problem behaviors, and anger-provoking thoughts/beliefs are all addressed in different ways (Chemtob, 1997).

Cognitive-behavioral treatment, such as anxiety management, shows positive results when used to address anger and applies many techniques to manage these three anger components.

DISCUSSION

Prevalence

A study of sample OEF/OIF veterans found that over half of the veterans with PTSD indicated that they had been aggressive in the past 4 months, such as threatening physical violence, destroying property, and having a physical fight with someone. Veterans with sub-threshold PTSD syndrome reported just about the same amount of aggressive behavior as the veterans with PTSD. In fact, anger has been shown to be associated with other co-morbid conditions to PTSD, such as head injury and alcohol (substance) abuse. Each of these conditions has been associated with elevated anger and hostility in veterans from previous conflicts. High levels of anger have been observed in veterans of the Iraq and Afghanistan Wars. (Jakupcak, 2007)

In another survey of 2797 US soldiers returning from deployment, overall, 40 percent of soldiers reported killing or being responsible for killing during their deployment. Even after controlling for combat exposure, killing was a significant predictor of PTSD symptoms, alcohol abuse, anger, and relationship problems Maquan et al., 2010).

A study assessing Vietnam combat veterans and comparing them to veterans who did not serve in war found that the combat veterans were not significantly angrier than their veteran peers who did not serve in Southeast Asia. Additionally, various parameters of

war zone duty were not highly associated with anger scores. However, combat veterans with PTSD scored significantly higher than veterans without PTSD on measures of anger, arousal, and range of anger-eliciting situations, hostile attitudinal outlook, and tendency to hold anger in. These results suggest that PTSD, rather than war zone duty, is associated with various dimensions of angry affect (McFalls et al., 1999).

Anger can be a very difficult emotion to deal with and can lead to a number of legal and interpersonal problems, such as domestic violence. In fact, individuals with PTSD are particularly at risk for the perpetration of relationship violence.

Research has identified anger as prominent in and an influence on treatment outcomes for military veterans with PTSD. To improve treatment effectiveness, clinicians need to assess veterans' anger, aggression, and alcohol use, as well as their current fear of anger and elucidate the relationship between these factors (Forbes, 2008).

Chemtob et al. (1997) described three components of post-traumatic anger that can become maladaptive or interfere with one's ability to adapt to current situations that do not involve extreme threat:

- **Arousal:** Anger is marked by the increased activation of the cardiovascular, glandular, and brain systems associated with emotion and survival. It is also marked by increased muscle tension. Sometimes with individuals who have PTSD, this increased internal activation can become reset as the normal level of arousal and can intensify the actual emotional and physical experience of anger. This can cause a person to feel frequently on edge, keyed up, or irritable and can cause a person to be more easily provoked. It is common for traumatized individuals to actually seek out situations that require them to stay alert and ward off potential danger. Conversely, they may use alcohol and drugs to reduce overall internal tension.
- **Behavior:** Often, the most effective way of dealing with extreme threat is to act aggressively, in a self-protective way. Additionally, many people who were traumatized at a relatively young age do not learn different ways of handling threat and tend to become caught in their ways of reacting when they feel threatened. This is especially true of people who tend to be impulsive (who act before they think). Again, as stated above, while these strategies for dealing with threat can be adaptive in certain circumstances, individuals with PTSD can become stuck in using only one strategy, when other approaches would be more constructive. Behavioral aggression may take many forms, including aggression toward others, passive-aggressive behavior (e.g., complaining, "backstabbing," deliberately being late or doing a poor job), or self-aggression (self-destructive activities, self-blame, being chronically hard on oneself, self-injury).
- **Thoughts and Beliefs:** The thoughts or beliefs that people have to help them understand and make sense of their environment can over-exaggerate threat. Often, the individual is not fully aware of these thoughts and beliefs, but they cause the person to perceive more hostility, danger, or threat than others might feel is necessary. For example, a combat veteran may become angry when others around him (wife, children, and coworkers) don't "follow the rules." The strength of his belief is actually related to how important it was for him to follow rules during the war in order to prevent deaths. Often, traumatized persons are not aware of the ways their beliefs are related to past trauma. For instance, by acting inflexibly toward others because of their need to control their environment, they can provoke others into becoming hostile, which creates a self-fulfilling prophecy. Common thoughts that people with PTSD have include: "You can't trust anyone," "If I got out of control, it would be horrible/life-threatening/intolerable," "After all

I've been through, I deserve to be treated better than this," and "Others are out to get me, or won't protect me, in some way."

How can individuals with post-traumatic anger get help?

In anger management treatment, arousal, behavior, and thoughts/beliefs are all addressed in different ways. Cognitive-behavioral treatment, a commonly utilized therapy that shows positive results when used to address anger, applies many techniques to manage these three anger components:

- For **increased arousal**, the goal of treatment is to help the person learn skills that will reduce overall arousal. Such skills include relaxation, self-hypnosis, and physical exercises that discharge tension.
- For **behavior**, the goal of treatment is to review a person's most frequent ways of behaving under perceived threat or stress and help him or her to expand the possible responses. More adaptive responses include taking a time-out; writing thoughts down when angry; communicating in more verbal, assertive ways; and changing the pattern "act first, think later" to "think first, act later."
- For **thoughts/beliefs**, individuals are given assistance in logging, monitoring, and becoming more aware of their own thoughts prior to becoming angry. They are additionally given alternative, more positive replacement thoughts for their negative ideas (e.g., "Even if I am out of control, I won't be threatened in this situation." or "Others do not have to be perfect in order for me to survive/be comfortable."). Individuals often role-play situations in therapy so they can practice recognizing their anger-arousing thoughts and apply more positive thoughts.

There are many strategies for helping individuals with PTSD deal with the frequent increase of anger they are likely to experience. Most individuals have a combination of the three anger components listed above, and treatment aims to help with all aspects of anger. One important goal of treatment is to improve a person's sense of flexibility and control so that he or she does not feel re-traumatized by his or her own explosive or excessive responses to anger triggers. Treatment is also meant to have a positive impact on personal and work relationships.

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APPENDIX A: Guideline Development Process

The update of the VA/DoD Clinical Practice Guideline for Management of Post-Traumatic Stress was developed following the steps described in “Guideline for Guidelines,” an internal working document of the VA/DoD Evidence Based Practice Working Group, that requires an ongoing review of guideline works in progress.

The Offices of Quality Performance and Patient Care Services of the VA, and the Army Medical Command of the DoD identified clinical leaders to champion the guideline development process. During a preplanning conference call, the clinical leaders defined the scope of the guideline and identified a group of clinical experts from the VA and DoD to form the Management of Post-Traumatic Stress Working Group (WG). For this guideline these WG participants were drawn from the fields of primary care, psychiatry, psychology, internal medicine, pharmacology, nursing, and social work.

The WG participated in 2 face-to-face meetings to reach consensus about the guideline algorithm and evidence-based recommendations and to prepare a draft update document. The draft continued to be revised by the Working Group through numerous conference calls and individual contributions to the document.

Recommendations for the management of post-traumatic stress were derived through a rigorous methodological approach that included the following:

- Determining appropriate criteria such as effectiveness, efficacy, population benefit, or patient satisfaction
- Reviewing literature to determine the strength of the evidence in relation to these criteria
- Formulating the recommendations and grading the level of evidence supporting the recommendation

After orientation to the goals and scope of the guideline update, the WG developed a set of 13 researchable questions within the focus areas of the guideline and identified associated key terms. For this guideline, two sets of questions were developed. The First (A) addressed *acute and early intervention aimed at/prevention of PTSD in adults with recent exposure to trauma*. The second set (B) focused on *therapy of adult patients with PTSD to achieve resolution of symptoms and functional outcome*. This approach ensured that the guideline development work outside of meetings focused on issues that practitioners considered important and also produced criteria for the literature search and selection of included studies that formed the body of evidence for this guideline update.

All questions specified (adapted from the Evidence-Based Medicine toolbox, Center for Evidence-Based Medicine, [<http://www.cebm.net>]):

- **Population** – Characteristics of the target patient population
- **Intervention** – Exposure, diagnostic, or prognosis
- **Comparison** – Intervention, exposure, or control used for comparison
- **Outcome** – Outcomes of interest

These specifications served as the preliminary criteria for selecting studies. See *PICO Questions to Guide Literature Search* for a complete listing and categorization of the questions (*end of this appendix*).

Literature Search

An initial global literature search yielded 59 systematic reviews/meta-analyses addressing pharmacotherapy, psychotherapy, combination, enhancement, complementary and other topics. One hundred and seventy eight (178) RCTs were found on the same subjects. Twenty-four controlled trials (CT) addressed combination, enhancement, and other areas. Refinement of the review process with input from the WG members resulted in the studies being identified that met the baseline criteria for inclusion,

addressed one or more of the researchable questions, and covered topic areas that had either not been addressed in the previous version of this guideline or had been included but not fully developed. A more detailed (full) search was conducted on each question, supplemented by hand searches and cross-referencing to search for relevant articles. The searches for these questions covered the period since the publication of the first VA/DoD CPG on management of post-traumatic stress (between January 1, 2002 and August, 2009).

Selection of Evidence

The evidence selection process was designed to identify the best available evidence to address each key question and ensure maximum coverage of studies at the top of the hierarchy of study types. Published, peer-reviewed RCTs, as well as meta-analyses and systematic reviews that included randomized controlled studies, were considered to constitute the strongest level of evidence in support of guideline recommendations. This decision was based on the judgment that RCTs provide the clearest, most scientifically sound basis for judging comparative efficacy. The WG also recognized the limitations of RCTs, particularly considerations of generalizability with respect to patient selection and treatment quality. When available, the search sought out critical appraisals already performed by others that described explicit criteria for deciding what evidence was selected and how it was determined to be valid. The sources that have already undergone rigorous critical appraisal include Cochrane Reviews, Best Evidence, Technology Assessment, AHRQ systematic evidence reports, and other published Evidence-based Clinical Practice Guidelines.

The following databases were searched: Medline/Pubmed, Embase, PsycINFO, OVID, PILOT, and Cochrane Central Register of Controlled Trials. Limits were set for language (English), and type of research (RCT, systematic reviews including EPC and HTA reviews and meta-analyses). For prognostic and diagnostic questions (e.g., does test improve outcome?); cohort or other prospective non-RCT designs were considered.

The following inclusion criteria were used to select the articles identified in the literature search for possible inclusion:

- Published in United States, United Kingdom, Europe, Australia, Japan, New Zealand
- Full articles only published in English
- Study populations: age limited to adults 18 years of age or older; all races, ethnicities, and cultural groups
- Relevant outcomes able to be abstracted from the data presented in the articles
- Sample sizes appropriate for the study question addressed in the paper. RCTs were included if they were initiated with 30 or more participants

Preparation of Evidence Tables (Reports) and Evidence Rating

The results of the searches were organized in evidence reports, and copies of the original studies were provided to the WG for further analysis. Each reference was appraised for scientific merit, clinical relevance, and applicability to the populations served by the VA and DoD health care systems.

Recommendation and Quality Rating

Evidence-based practice involves integrating clinical expertise with the best available clinical evidence derived from systematic research.

A group of research analysts read and coded each article that met inclusion criteria. The articles were assessed for methodological rigor and clinical importance. Clinical experts from the VA and DoD WG reviewed the results and evaluated the strength of the evidence, considering quality of the body of evidence (made up of the individual studies) and the significance of the net benefit (potential benefit minus possible harm) for each intervention.

The overall strength of each body of evidence that addresses a particular Key Question was assessed using methods adapted from the U.S. Preventive Services Task Force (Harris, 2001). To assign an overall quality [QE] (see [Table A-2](#)) of the evidence (good, fair, or poor), the number, quality, and size of the studies; consistency of results between studies; and directness of the evidence were considered. Consistent results from a number of higher-quality studies [LE] (see [Table A-1](#)) across a broad range of populations; supports with a high degree of certainty that the results of the studies are true and therefore the entire body of evidence would be considered “good” quality. A “fair” quality was assigned to the body of evidence

indicating that the results could be due to true effects or to biases present across some or all of the studies. For a “poor” quality body of evidence, any conclusion is uncertain due to serious methodological shortcomings, sparse data, or inconsistent results.

The Strength of Recommendation [SR] was then determined based on the Quality of the Evidence [QE], and the clinical significance of the net benefit [NB] (see [Table A-3](#)) for each intervention, as demonstrated by the body of evidence. Thus, the grade (i.e., A, B, C, D or I) assigned to guideline recommendations reflect both variables; the Quality of the evidence and the potential clinical benefit that the intervention may provide to patients (see [Table A4](#)).

Table A-1: Level of Evidence (LE)	
I	At least one properly done RCT
II-1	Well-designed controlled trial without randomization
II-2	Well-designed cohort or case-control analytic study, preferably from more than one source
II-3	Multiple time series evidence with/without intervention, dramatic results of uncontrolled experiment
III	Opinion of respected authorities, descriptive studies, case reports, and expert committees

Table A-2: Overall Quality [QE]	
Good	High grade evidence (I or II-1) directly linked to health outcome
Fair	High grade evidence (I or II-1) linked to intermediate outcome; or Moderate grade evidence (II-2 or II-3) directly linked to health outcome
Poor	Level III evidence or no linkage of evidence to health outcome

Table A-3: Net Effect of the Intervention [NB]	
Substantial	More than a small relative impact on a frequent condition with a substantial burden of suffering; or A large impact on an infrequent condition with a significant impact on the individual patient level.
Moderate	A small relative impact on a frequent condition with a substantial burden of suffering; or A moderate impact on an infrequent condition with a significant impact on the individual patient level.
Small	A negligible relative impact on a frequent condition with a substantial burden of suffering; or A small impact on an infrequent condition with a significant impact at the individual patient level.
Zero or Negative	Negative impact on patients; or No relative impact on either a frequent condition with a substantial burden of suffering, or an infrequent condition with a significant impact on the individual patient level.

Table A-4: Final Grade of Recommendation [SR]				
	<i>The net benefit of the intervention</i>			
Quality of Evidence	Substantial	Moderate	Small	Zero or Negative
Good	A	B	C	D
Fair	B	B	C	D
Poor	I	I	I	I

Strength of Recommendation Rating [SR]

A	A strong recommendation that the clinicians provide the intervention to eligible patients. <i>Good evidence was found that the intervention improves important health outcomes and concludes that benefits substantially outweigh harm.</i>
B	A recommendation that clinicians provide (the service) to eligible patients. <i>At least fair evidence was found that the intervention improves health outcomes and concludes that benefits outweigh harm.</i>
C	No recommendation for or against the routine provision of the intervention is made. <i>At least fair evidence was found that the intervention can improve health outcomes, but concludes that the balance of benefits and harms is too close to justify a general recommendation.</i>
D	Recommendation is made against routinely providing the intervention to asymptomatic patients. <i>At least fair evidence was found that the intervention is ineffective or that harms outweigh benefits.</i>
I	The conclusion is that the evidence is insufficient to recommend for or against routinely providing the intervention. <i>Evidence that the intervention is effective is lacking, of poor quality, or conflicting, and the balance of benefits and harms cannot be determined.</i>

Algorithm Format

The clinical algorithm incorporates the information presented in the guideline in a format which maximally facilitates clinical decision-making. The use of the algorithmic format was chosen because of evidence showing that such a format improves data collection, facilitates diagnostic and therapeutic decision-making, and changes patterns of resource use.

The algorithmic format allows the provider to follow a linear approach to critical information needed at the major decision points in the clinical process and includes:

- An ordered sequence of steps of care
- Recommended observations
- Decisions to be considered
- Actions to be taken

A clinical algorithm diagrams a guideline into a step-by-step decision tree. Standardized symbols are used to display each step in the algorithm (Society for Medical Decision-Making Committee, 1992). Arrows connect the numbered boxes indicating the order in which the steps should be followed.

	Rounded rectangles represent a clinical state or condition.
	Hexagons represent a decision point in the guideline, formulated as a question that can be answered Yes or No. A horizontal arrow points to the next step if the answer is YES. A vertical arrow continues to the next step for a negative answer.
	Rectangles represent an action in the process of care.
	Ovals represent a link to another section within the guideline.

A letter within a box of an algorithm refers the reader to the corresponding annotation. The annotations elaborate on the recommendations and statements that are found within each box of the algorithm. Included in the annotations are brief discussions that provide the underlying rationale and specific evidence

tables. Annotations indicate whether each recommendation is based on scientific data or expert opinion. A complete bibliography is included in the guideline.

Lack of Evidence – Consensus of Experts

Where existing literature was ambiguous or conflicting, or where scientific data was lacking on an issue, recommendations were based on the clinical experience of the Working Group.

This update of the Stroke Rehabilitation Guideline is the product of many months of diligent effort and consensus building among knowledgeable individuals from the VA, DoD, and academia, as well as guideline facilitators from the private sector. An experienced moderator facilitated the multidisciplinary Working Group. The list of participants is included in [Appendix D](#)

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Management of Post-Traumatic Stress**UPDATE 2010 PICO QUESTIONS****A. Acute Intervention / Prevention in adults with recent exposure to trauma or diagnosed with ASD**

1. Is **debriefing** more effective than no intervention or any other intervention for prevention of PTS disorder?
2. Is **pharmacotherapy** more effective than no intervention or any other intervention for prevention of full PTS disorder?
 - a. **alpha-blockers**
 - b. **beta-blockers**
 - c. **Sympatolitic**
 - d. **DCS and CBT**
3. Are any **psychotherapy techniques** more effective than no intervention or any other intervention for prevention of full PTS disorder?
4. Is **psychoeducation** more effective than no intervention or any other intervention for prevention of full PTS disorder?
5. Are any **Complimentary Alternative Medicine (CAM) approaches** more effective than no intervention or any other intervention for prevention of full PTS disorder?
6. Is **early intervention** more effective than **later intervention** for prevention of full PTS disorder?
7. Is **combination** of pharmacotherapy and psychotherapy more effective than no intervention or any other intervention for prevention of full PTS disorder?
8. Is **peer counseling** more effective than **counseling** by an outside team for prevention of full PTS disorder?
9. Is **outreach (screening, repeated screening)** more effective than no intervention or any other intervention for prevention of full PTS disorder?

B. Treatment for PTSD

Which of the following treatment interventions for adult patients with PTSD lead to achieve Resolution of symptoms and Functional outcome? (Consider effectiveness in special population (e.g., Gender, Combat veterans, Elderly))

10. Psychotherapy Techniques:

- Is **prolonged exposure** more effective interventions in the treatment of PTSD?
- Is EMDR more effective than other interventions in the treatment of PTSD?
- Is cognitive processing therapy more effective than other interventions in the treatment of PTSD?
- Is DBT, MBCT, ACT or mindfulness more effective than other interventions in the treatment of PTSD?
- Psychoeducation (Battlemind, stress control) more effective than other interventions in the treatment of PTSD?

11. Pharmacotherapy Classes:

- MAOI and TCAs
- SSRIs
- SNRIs
- DNRI
- Novel antidepressant (trazodone, nefazodone)
- Conventional antipsychotics
- Atypical antipsychotics
- Anticonvulsants
- Anxiolytic (Benzodiazepine)
- Sedative hypnotics (for sleep)
- Antiadrenergics

12. Somatic:

- ECT
- rTMS

13. Complementary Alternative Medicine (CAM)

- Acupuncture
- Meditation
- Herbal, food suppl.,
- Yoga, Tai Chi

APPENDIX B
Acronym List

ABCs	Airway, breathing, circulation
AHCPR	Agency for Healthcare Policy and Research
APA	American Psychiatric Association
ASD	Acute stress disorder
ASR	Acute stress reaction
AUDIT	Alcohol Use Disorders Identification Test
BEP	Brief Eclectic Psychotherapy
BFT	Behavioral Family Therapy
BL	baseline;
CAGE	Alcohol abuse/dependence screening test mnemonic
CAPS	Clinician-Administered PTSD Scale;
CAPS	Clinician Administered PTSD Scale
CAPS-1	Clinician-Administered PTSD Scale1-month version;
CAPS-2	Clinician-Administered PTSD Scale1-week version;
CAPS-2	Clinician-Administered PTSD Scale Part 2;
CAPS-D	Clinician-Administered PTSD Scale hyperarousal subscale;
CBC	Complete blood count
CBT	Cognitive Behavioral Therapy
CCTR	Cochrane Central Register of Controlled Trials
CDR	Commander
CGI	Clinical Global Impression;
CGI-I	Clinical Global Impression-Improvement;
CGI-S	Clinical Global Assessment of Severity;
CGIC	Clinical Global Impression of Change;
CI	confidence interval;
CISD	Critical Incident Stress Debriefing
CNS	Central nervous system
COSR	Combat and operational stress reactions
CPT	Cognitive Processing Therapy
CPT-C	CPT-Cognitive
CT	Cognitive Therapy
CTT	Cognitive Trauma Therapy
CV	Cardiovascular
DARE	Database of Abstracts of Reviews of Effectiveness
DAST	Drug Abuse/Dependence Screener
DBT	Dialectical Behavioral Therapy
DCS	D-cycloserine;
DoD	Department of Defense
DSM-IV	Diagnostic and Statistical Manual of Mental Disorders (4th ed.)
DTS	Davidson Trauma Scale;
dx	diagnosis
EBM	Evidence-based medicine
EBPTU	Evaluation and Brief PTSD Treatment Unit
ED	Emergency Department;
EEG	Electroencephalography
EKG	Electrocardiogram

EMDR	Eye Movement Desensitization and Reprocessing
EMTs	Emergency Medical Teams
ES	effect size
ESRT	Emotional Self-Regulation Therapy
ET	Exposure Therapy
EtoH	Ethanol
FDA	U. S. Food and Drug Administration
GAF	Global Assessment of Function
GI	Gastrointestinal
grp(s)	group(s);
GT	group therapy
GU	Genitourinary
HIV	Human immunodeficiency virus
Interapy	Internet Therapy
IRT	Imagery Rehearsal Therapy
IRT	Image Rehearsal Therapy
ITT	Intention to Treat
LOC	Level of consciousness
LOF	Level of function
MAOIs	Monoamine oxidase inhibitors
MAST	Michigan Alcohol Screening Test
MDD	Major Depressive Disorder
MHP	Mental health providers
MI	Myocardial infarction
MISS	Mississippi Scale for Combat-Related PTST-civilian version;
MMSE	Mini-Mental State Examination
MRI	Magnetic resonance imaging
MSE	Mental status examination
MVA	motor vehicle accident;
N/R	not reported;
NET	Narrative Exposure Therapy (a form of Exposure Therapy)
NIMH	National Institute of Mental Health
NS	Nervous system
OMO	Ongoing military operations
OTC	Over-the-counter
PCL	Posttraumatic Stress Disorder Checklist;
PCL-C	PTSD Checklist – Civilian Version
PCL-M	Patient Checklist for PTSD-Military Version;
PCL-M	PTSD Checklist – Military Version
PCL-S	PTSD Checklist – Stressor Specific Version
PCP	Primary care provider
PE	Physical examination
PE (Interventions)	Prolonged Exposure
PIES	Proximity, Immediacy, Expectancy, Simplicity
PSQI	Pittsburgh Sleep Quality Index
PsychEd	Psychological Education
pt(s)	patient(s);
PTSD	posttraumatic stress disorder;
PTSD	Post-traumatic Stress Disorder

QE	Quality of evidence
RA	Repeated Assessment
RCS	Readjustment Counseling Services
RCT	Randomized controlled trial
RLX	Relaxation Training
RTD	Return-to-duty
SC	Supportive Counseling
SC	Supportive Counseling
SIADH	Syndrome of inappropriate antidiuretic hormone
SIPU	Specialized Inpatient PTSD Unit
SIT	Stress Inoculation Therapy
SM	Service member
SR	Strength of recommendation
SSRI	Selective Serotonin Reuptake Inhibitors
SUD	Substance Use Disorder
SUNY	State University of New York
TAU	Treatment as Usual
TCAs	Tricyclic Antidepressants
TOP-8	Treatment Outcome PTSD rating scale;
TSH	Thyroid Stimulating Hormone
Tx or RX	treatment
USPSTF	U.S. Preventive Service Task Force
VA	Veterans Affairs
VAMC	Veterans Affairs Medical Center
Vets	Veterans
VHA	Veterans Health Administration
WL	wait list

APPENDIX C

PTSD Screening Tools

Primary Care PTSD Screen (PC-PTSD)

The table below shows the Primary Care PTSD Screen (PC-PTSD) that has been designed for use in primary care and other medical settings. The PC-PTSD is brief and problem-focused. The screen does *not* include a list of potentially traumatic events. There are two reasons for this:

- Studies on trauma and health in both male and female patients suggest that the active mechanism linking trauma and physical health is the diagnosis of PTSD. In other words, the relationship between trauma and health appears to be mediated through a current PTSD diagnosis.
- A symptom-driven screen, rather than a trauma-focused screen, is attractive to primary care staff who may not be able to address a patient's entire trauma history during their visit with the patient. Such a trauma inquiry might be especially problematic with a VA population where the average number of traumatic events meeting criterion A for PTSD is over four.

A positive response to the screen does not necessarily indicate that a patient has Post-traumatic Stress Disorder. However, a positive response does indicate that a patient *may* have PTSD or trauma-related problems and further investigation of trauma symptoms by a mental-health professional may be warranted.

Primary Care PTSD Screen In your life, have you ever had any experience that was so frightening, horrible, or upsetting that, <i>in the past month</i>, you...	
1. Have had nightmares about it or thought about it when you did not want to?	YES NO
2. Tried hard not to think about it or went out of your way to avoid situations that reminded you of it?	YES NO
3. Were constantly on guard, watchful, or easily startled?	YES NO
4. Felt numb or detached from others, activities, or your surroundings?	YES NO
<i>Current research suggests that the results of the PC-PTSD should be considered "positive" if a patient answers "yes" to any two items.</i>	

PTSD CheckList – Civilian Version (PCL-C)**Patient's Name:** _____

Instruction to patient: Below is a list of problems and complaints that veterans sometimes have in response to stressful life experiences. Please read each one carefully, put an "X" in the box to indicate how much you have been bothered by that problem *in the last month*.

No.	Response:	Not at all (1)	A little bit (2)	Moderately (3)	Quite a bit (4)	Extremely (5)
1.	Repeated, disturbing <i>memories, thoughts, or images</i> of a stressful experience from the past?					
2.	Repeated, disturbing <i>dreams</i> of a stressful experience from the past?					
3.	Suddenly <i>acting or feeling</i> as if a stressful experience <i>were happening again</i> (as if you were reliving it)?					
4.	Feeling <i>very upset</i> when <i>something reminded</i> you of a stressful experience from the past?					
5.	Having <i>physical reactions</i> (e.g., heart pounding, trouble breathing, or sweating) when <i>something reminded</i> you of a stressful experience from the past?					
6.	Avoid <i>thinking about</i> or <i>talking about</i> a stressful experience from the past or avoid <i>having feelings</i> related to it?					
7.	Avoid <i>activities or situations</i> because <i>they remind you</i> of a stressful experience from the past?					
8.	Trouble <i>remembering important parts</i> of a stressful experience from the past?					
9.	Loss of <i>interest in things that you used to enjoy</i> ?					
10.	Feeling <i>distant or cut off</i> from other people?					
11.	Feeling <i>emotionally numb</i> or being unable to have loving feelings for those close to you?					
12.	Feeling as if your <i>future</i> will somehow be <i>cut short</i> ?					
13.	Trouble <i>falling or staying asleep</i> ?					
14.	Feeling <i>irritable</i> or having <i>angry outbursts</i> ?					
15.	Having <i>difficulty concentrating</i> ?					
16.	Being " <i>super alert</i> " or watchful on guard?					
17.	Feeling <i>jumpy</i> or easily startled?					

Weathers, F.W., Huska, J.A., Keane, T.M. *PCL-C for DSM-IV*. Boston: National Center for PTSD – Behavioral Science Division, 1991.

This is a Government document in the public domain.

PTSD CheckList – Military Version (PCL-M)

Patient's Name: _____

Instruction to patient: Below is a list of problems and complaints that veterans sometimes have in response to stressful military experiences. Please read each one carefully, put an "X" in the box to indicate how much you have been bothered by that problem in *the last month*.

No.	Response:	Not at all (1)	A little bit (2)	Moderately (3)	Quite a bit (4)	Extremely (5)
1.	Repeated, disturbing <i>memories, thoughts, or images</i> of a stressful military experience?					
2.	Repeated, disturbing <i>dreams</i> of a stressful military experience?					
3.	Suddenly <i>acting or feeling</i> as if a stressful military experience <i>were happening again</i> (as if you were reliving it)?					
4.	Feeling <i>very upset</i> when <i>something reminded</i> you of a stressful military experience?					
5.	Having <i>physical reactions</i> (e.g., heart pounding, trouble breathing, or sweating) when <i>something reminded</i> you of a stressful military experience?					
6.	Avoid <i>thinking about</i> or <i>talking about</i> a stressful military experience or avoid <i>having feelings</i> related to it?					
7.	Avoid <i>activities</i> or <i>situations</i> because <i>they remind you</i> of a stressful military experience?					
8.	Trouble <i>remembering important parts</i> of a stressful military experience?					
9.	Loss of <i>interest in things that you used to enjoy</i> ?					
10.	Feeling <i>distant</i> or <i>cut off</i> from other people?					
11.	Feeling <i>emotionally numb</i> or being unable to have loving feelings for those close to you?					
12.	Feeling as if your <i>future</i> will somehow be <i>cut short</i> ?					
13.	Trouble <i>falling</i> or <i>staying asleep</i> ?					
14.	Feeling <i>irritable</i> or having <i>angry outbursts</i> ?					
15.	Having <i>difficulty concentrating</i> ?					
16.	Being " <i>super alert</i> " or watchful on guard?					
17.	Feeling <i>jumpy</i> or easily startled?					

Weathers, F.W., Huska, J.A., Keane, T.M. *PCL-M for DSM-IV*. Boston: National Center for PTSD – Behavioral Science Division, 1991.

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PTSD CheckList – Stressor Specific Version (PCL-S)

The event you experienced was: _____ on: _____

Instruction to patient: Below is a list of problems and complaints that veterans sometimes have in response to stressful military experiences. Please read each one carefully, put an “X” in the box to indicate how much you have been bothered by that problem in *the last month*.

No.	Response:	Not at all (1)	A little bit (2)	Moderately (3)	Quite a bit (4)	Extremely (5)
1.	Repeated, disturbing <i>memories, thoughts, or images</i> of the stressful experience?					
2.	Repeated, disturbing <i>dreams</i> of the stressful experience?					
3.	Suddenly <i>acting or feeling</i> as if the stressful experience <i>were happening again</i> (as if you were reliving it)?					
4.	Feeling <i>very upset</i> when <i>something reminded</i> you of the stressful experience?					
5.	Having <i>physical reactions</i> (e.g., heart pounding, trouble breathing, or sweating) when <i>something reminded</i> you of the stressful experience?					
6.	Avoid <i>thinking about or talking about</i> the stressful experience or avoid <i>having feelings</i> related to it?					
7.	Avoid <i>activities or situations</i> because <i>they remind</i> you of the stressful experience?					
8.	Trouble <i>remembering important parts</i> of the stressful experience?					
9.	Loss of <i>interest in things that you used to enjoy</i> ?					
10.	Feeling <i>distant or cut off</i> from other people?					
11.	Feeling <i>emotionally numb</i> or being unable to have loving feelings for those close to you?					
12.	Feeling as if your <i>future</i> will somehow be <i>cut short</i> ?					
13.	Trouble <i>falling or staying asleep</i> ?					
14.	Feeling <i>irritable</i> or having <i>angry outbursts</i> ?					
15.	Having <i>difficulty concentrating</i> ?					
16.	Being “ <i>super alert</i> ” or watchful on guard?					
17.	Feeling <i>jumpy</i> or easily startled?					

Weathers, F.W., Huska, J.A., Keane, T.M. *PCL-S for DSM-IV*. Boston: National Center for PTSD – Behavioral Science Division, 1991.*This is a Government document in the public domain.*

APPENDIX D Participant List

Curtis Aberle, RN, NP

Chief, FMS McWethy
Brooke Army Medical Center
Fort Sam Houston, TX 78234
Phone: 210-295-4667
Email: curtis.aberle@amedd.army.mil

Ron Acierno, Ph.D

PCT Director, Ralph H. Johnson VAMC
MUSC Crime Victims Center
109 Bee Street
Charleston, SC 29401
Phone: 843-792-2945
Email: acierno@musc.edu

Carla Cassidy, RN, MSN, CRNP

Director, Evidence Based Practice Program
Department of Veterans Affairs
1717 H Street
4th Floor, Room 406
Washington, DC 20006
Phone: 202- 266-4502
Email: Carla.cassidy@va.gov

Kathleen M. Chard, PhD

VA CPT Implementation Director
Director, PTSD and Anxiety Disorders Division
Cincinnati VA Medical Center
Address: 3200 Vine Street, Cincinnati, Ohio 45220
Phone: 859-572-6741
Email: Kathleen.Chard@va.gov

Debra Dandridge, PharmD

Clinical Pharmacist
Brooke Army Medical Center
Department of Pharmacy
Fort Sam Houston, TX 78234
Phone: 210-916-2612
Email: debra.dandridge@us.army.mil

Justin S. Campbell, PhD

LCDR, U.S. Navy Medical Service Corps
Senior Analyst, Deployment Health
Bureau of Medicine and Surgery
2300 E. St. NW
Washington, DC, 20372
Phone: 202-762-3013
Email: justin.s.campbell@med.navy.mil

Daniella David, MD, M.Sc

Professor of Clinical Psychiatry, University of Miami
PTSD Program Medical Director, Miami VA healthcare System
1201 NW 16th Street, 116A12
Miami, FL 33125
Phone: 305-575-7000, ext 3953
Email: Daniella.david@va.gov

Ernest Degenhardt, MSN, FNP, RN

Chief, Evidence-Based Practice
US Army Medical Command
2050 Worth Road, Suite 26
Fort Sam Houston TX 78234
Phone: 210-221-6527
Email: ernest.degenhardt@amedd.army.mil

Martha D'Erasmus MPH

Independent Consultant
4550 North Park Ave, # 505
Chevy Chase, MD 20815
Phone: 301- 654-3152
Email: Marty@hqiinc.com

Kathryn J. Dolter, RN, PhD

Clinical Quality Program Specialist
Evidence-Based Clinical Practice Guidelines
Department of Veterans Affairs
1717 H. Street, N.W.
Washington, D.C., 20006
Phone: 202-461-1078
E-mail: Kathryn.Dolter@va.gov

Charles C Engel, MD, MPH

Colonel, MC, US Army
Dir, DoD Deployment Health Clinical Center
Assoc Chair (Research), Department of Psychiatry
Uniformed Services University School of Medicine
Phone: 202-782-8064
Email: charles.engel@amedd.army.mil

Rosalie Fishman, RN, MSN, CPHQ

President
Healthcare Quality Informatics, Inc.
2275 Shady Grove Rd, Suite 500
Rockville, MD 20850
Phone: 301- 296-4542
Email Rosalie@hqiinc.com

Joel T. Foster, PhD,

Capt, US Air Force, BSC
Licensed Psychologist
ADAPT Program Element Chief
Travis AFB/60 MDOS/SGOW
Phone: 707-423-2317
Email: joel.foster-02@travis.af.mil

Matthew J. Friedman, MD, Ph.D

Executive Director
National Center for PTSD
White River Junction VA Medical Center
215 North Main Street
White River Junction, VT 05009
Phone: 802-296-5132
Email: Matthew.Friedman@VA.gov or
Matthew.J.Friedman@Dartmouth.edu

Stella M Hayes, MD

CDR, US Navy
Family Physician / Deputy Group Surgeon
2nd Marine Logistic Group
ATTN: Group Surgeon's Office
308 G Street
Camp Lejeune, NC 28547
Phone (910)450-6675
Email: stella.hayes@med.navy.mil

MAJ Kenneth Hyde, PA-C

MAJ, US Army
Madigan Army Medical Center
ATTN: MCHJ-EM
Bldg 9040, Rm 1-54-02
Tacoma, WA 98431
Phone: 253-968-0599
Email: ken.hyde@us.army.mil

Charles Hoge, MD

Director, Division of Psychiatry and Neuroscience
Walter Reed Army Institute of Research
503 Robert Grant Ave
Washington, DC 20307-5001
Phone: 301-319-9342
Email: Charles.hoge@us.army.mil

Matthew D. Jeffreys, MD

Associate Professor of Psychiatry, UTHSCSA
PCT Medical Director
South Texas Health care System
5788 Eckhert Rd
San Antonio, TX 78240
Phone: 210-699-2145
Email: matthew.jeffreys@va.gov

Terence M. Keane, Ph.D

Associate Chief of staff, Research & development
VA Boston Healthcare System
150 South Huntington Avenue
Boston, MA 02130
Phone: 857-364-4551
Email: Terry.Keane@va.gov

Robert L. Koffman, MD, MPH

Captain, MC, US Navy
Deputy Director for Clinical Operations
National Intrepid Center of Excellence
for Psychological Health and Traumatic Brain Injury
8901 Wisconsin Blvd
Bethesda, MD 20889-5600
Phone: 301-319-3606
Email: robert.koffman@med.navy.mil

Harold Kudler, MD

Coordinator, VISN 6 Mental Health Service Line
Durham VA Medical Center
508 Fulton St.
Durham, NC 27705
Phone: 919-451-3369
Email: Harold.Kudler@va.gov

James R. Liffbrig, MD, MPH

COL, MC, US Army Chief, Department of Family Medicine
Womack Army Medical Center
Fort. Bragg NC 28310
Phone: 910-907-6823
Email: james.liffbrig@amedd.army.mil

Patrick J. Lowry, MD

COL, MC, US Army
Psychiatrist
Munson Army Health Center
550 Pope Ave
Ft Leavenworth, KS 66027
Phone: 913-758-3751
Email: patrick.lowry@us.army.mil

Sandra McNaughton, RN, NP

LTC, AN, US Army
Walter Reed Army Medical Center
6900 Georgia Ave
Washington DC 20307
Phone: 202-782-7230
Email: sandra.mcnaughton@us.arm.mil

David T. Orman, MD

Chief, PTSD-TBI/BH
Integration (PTBI)
US Army Medical Command
2050 Worth Road
Fort Sam Houston, TX 78234
Phone: 210-221-6792
Email: david.orman@amedd.army.mil

Alan L. Peterson, Ph.D

Professor
University of Texas Health Science Center at San Antonio
Department of Psychiatry
7703 Floyd Curl Dr.
San Antonio, TX 78229-3900
Phone: 210-508-5428
Email: peterson3@uthscsa.edu

Sheila M. Rauch, Ph.D

Director, SeRV-MH
VA Ann Arbor healthcare System
Assistant Professor of Psychology in Psychiatry
University of Michigan Medical School
2215 Fuller Rd (116c)
Ann Arbor, MI 48105
Phone: 734-845-3545
Email: sherauch@med.umich.edu or
Sheila.rauch@va.gov

Miguel E. Roberts, Ph.D

Chief, Psychological Health Clinical Guidelines
Defense Centers of Excellence for Psychological Health
and Traumatic Brain Injury
Psychological Health Clinical Standards of Care
1335 East West Hwy, 9th Floor
Silver Spring, MD 20910
Phone: 301-295-3541
Email: miguel.roberts@tma.osd.mil

Josef I. Ruzek, Ph.D

Director/Chief, Dissemination and Training Division,
National Center for PTSD
VA Palo Alto Health Care System
National Center for PTSD
785 Willow Road
Menlo Park CA 94025
Phone: 650-493-5000 ext. 22977
Email: Josef.Ruzek@va.gov

Todd P. Semla, MS, Pharm.D.

Clinical Pharmacy Specialist
Department of Veterans Affairs
National Pharmacy Benefits Management Services (119D)
1st Ave-1 Blk N of Cermak Rd (Building 37, Rm 139)
Hines, IL 60141
Phone: 708-786-7976
Email: Todd.semmla@va.gov

Murray B. Stein, MD, MPH

Professor of Psychiatry and family Preventive Medicine, UCSD
Staff Psychiatrist VA San Diego Healthcare System
UCSD and VASDHS
9500 Gilman Dr.(Is this VA address?)
La Jolla, CA 92093-0855
Phone: 858-534-6451
Email: mstein@ucsd.edu

Steven M. Southwick, MD

Professor Psychiatry, Yale University
Deputy Director Clinical Neuroscience Division
National Center for PTSD
VA Connecticut Healthcare System
Yale University Medical School
950 Campbell Ave
West Haven, CT 05516
Phone: 203-932-5711 ext. 2464
Email: Steven.southwick@va.gov

Mark B. Stephens, MD MS FAAFP

CAPT, MC, US Navy
Associate Professor and Chair
Department of Family Medicine
Uniformed Services University
4301 Jones Bridge Rd.
Bethesda, MD 20814-4799
Phone: 301-295-3632
Email: mstephens@usuhs.mil

Frances Stewart, MD

CAPT, MC, US Navy
Department of Psychiatry
National Naval Medical Center
8901 Rockville Pike
Bethesda, MD 20889
Phone: 202-685-6443
Email: frances.stewart@navy.mil

Oded Susskind, MPH

Medical Education Consultant
PO Box 112
Brookline MA 02446
Phone: 617- 232-3558
Email: Oded@tiac.net

Christopher Warner, MD, FAAFP

MAJ(P), MC, US Army
Command and General Staff College
100 Stimson Drive
Fort Leavenworth, KS 66027
Phone: 913-424-9472
Email: christopher.h.warner@us.army.mil

Marjory K. Waterman, MN, RN
Nurse Consultant/ CPG Coordinator
U.S. Army Medical Command
Evidence Based Practice Office
ATTN: MCHO-CL-Q
2050 Worth Road, Suite 26
Fort Sam Houston, TX 78234
Phone: 210-221-7281
Email: Marjory.waterman@us.army.mil

Robert J. Wilson, PsyD, ABPP
Col US Air Force
Director, Psychological Health Clinical Standards of Care
Defense Centers of Excellence for Psychological Health
and Traumatic Brain
Injury
Email: Robert.wilson@lakenheath.af.mil

Randon S. Welton, MD
Lt Col, USAF, MC
Chief, Modernization Division
Office of the Command Surgeon
AFMC/SGR
Phone:-937-656-3642
Email: randon.welton@wpafb.af.mil

CONTRIBUTORS AND REVIEWERS:

Nancy C. Bernardy, Ph.D.
Associate Director for Clinical Networking
PTSD Mentoring Program Manager
VA National Center for PTSD 116D
215 N. Main St.
White River Junction, VT 05009
(802) 296-5132 fax (802) 296-5135
Nancy.Bernardy@va.gov

Edward A Brusher, LCSW, BCD
LTC, MS US Army
Chief, Deputy Director, Behavioral Health Division
Office of the Surgeon General
BHD, HP&S Directorate, OTSG
Falls Church, VA 22041-3258
Phone: 703-681-4188
Email: edward.brusher@us.army.mil

Bruce Capehart, MD, MBA
Psychiatry, Attending
Durham VAMC
OEF/OIF Program (122B)
508 Fulton Street
Durham, NC 27705
Phone: (919) 296-0411, ext 5112
Email: bruce.capehart@va.gov

Michael E. Clark, PhD

Clinical Director, Chronic Pain rehabilitation Program
Thomas A. Haley veterans Hospital
13000 Bruce B. Blvd
Tampa, FL 33612
Phone: 813-972-2000 ext. 7484
Email: Michael.clark8@med.va.gov

Kent, Drescher, Kent

Health Science Specialist
Dept of Veterans Affairs
Nat Ctr PTSD
Palo Alto VAMC - NatCtrPTSD
795 Willow Rd Bld 352/111
Menlo Park, CA 94025
Phone: 650.493.5000 x22071
Email: kent.drescher@va.gov

Barbara A. Hermann, PhD

Associate Director for Research and Education
VA National Center for PTSD (116D)
215 North Main St.
White River Junction, VT 05009
802-296-5132 x6082 fax (802) 296-5135
Barbara.Herman@va.gov

Carolyn J. Greene, PhD

Clinical Psychologist
National Center for PTSD, Dissemination and Training Division
VA Palo Alto HCS
795 Willow Road (PTSD-334)
San Francisco, CA 94103
Phone: 650-493-5000 ext 22107
Email: Carolyn.greene3@va.gov

Julia Hoffman, Psy.D

Clinical Psychologist
National Center for Telehealth & Technology
795 Willow Road, 334-PTSD
Menlo Park, CA 94025
Phone: 650-493-5000 x20007
Email: Julia.e.hofman@us.army.mil

Eric Kuhn, PhD

Co-Director for Education, PTSD
VA Sierra Pacific (VISN 21) Mental Illness Research,
Education, & Clinical Center (MIRECC)
VA National Center for PTSD, Dissemination and Training Division
795 Willow Road Menlo Park, CA 94025
Phone: (650) 493-5000 x23160
Email: eric.kuhn@va.gov

Walter E. Penk, PhD, ABPP

Consultant,
Central Texas VA Healthcare System
1936 Oak Glen,
New Braunfels, Texas, 78132
Phone: 830-620-0222
Email: wepenk@att.net

James Spira, PhD, MPH

Director NCPTSD-Pacific Islands Division
Department of Veterans Affairs
3375 Koapaka St. I-560
Honolulu, Hawaii 96819
Phone: 808-954-6390
Email: James.spira@va.gov

Paula P. Schnurr, Ph.D.

Deputy Executive Director
National Center for PTSD (116D)
VA Medical and Regional Office Center
White River Junction, VT 05009
Phone: (802) 296-5132 FAX (802) 296-5135
Email: paula.schnurr@va.gov
or paula.P.Schnurr@Dartmouth.EDU

Jennifer Vasterling, PhD

Chief, Psychology Service
VA Medical Center – Boston
150 S Huntington Ave
Jamaica Plain, MA 02130
Phone: (857) 364-4038
Email: jennifer.vasterling@va.gov

APPENDIX E
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