Posttraumatic stress disorder in veterans of Iraq and Afghanistan: clinical presentations and interventions

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Clinical Presentations and Interventions

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Dedication

I would like to thank my family, friends, and instructors for supporting me through this process. I could not have done it without them.
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Introduction

John White, a 28-year-old male presents to the doctor’s office complaining of severe headaches that have been going on for about two months. The physician assistant (PA) further elicits a history and finds that the pain is constant and throbbing. Nothing relieves the pain. John also has nasal congestion and body aches. On review of systems, the PA finds that John is having some trouble falling and staying asleep. The PA then addresses social history and asks about alcohol, tobacco, and illicit drug use. John states that he was never really a big drinker, but is now drinking at least five beers a day because it seems to help him fall asleep at night. The PA then asks John what he does for a living and he states he is a U.S. marine who just returned from Iraq three months ago. When asked about a support system, John states that he doesn’t want to be around anyone because he feels like no one understands him. He also feels uncomfortable and anxious in social gatherings. Upon further questioning, John reveals that he had severed a mild traumatic brain injury while he was deployed, but states that he is fine now.

September 11, 2001, was a day to remember. Many can recall the horrifying memory of this day: where they were, what they were feeling, and how this would affect their lives. It was a day that would change the United States in ways no one could have anticipated. The World Trade Centers collapsed to the ground as every American watched in fear. Our country has faced numerous obstacles since September 11th, 2001. However, the United States military continue to fight for our country with courage and honor. The danger these service members encounter is undeniable, but many do not realize the negative impact it has on the quality of life of those who fought in Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF).

Posttraumatic Stress Disorder
The veterans who experienced combat during OIF and OEF have not only faced danger associated with war, but negative consequences on psychological, social, and physical functioning post-deployment. One of the most prevalent psychiatric disorders post-deployment is posttraumatic stress disorder (PTSD). Posttraumatic stress disorder is a syndrome that precipitates due to an exposure to a traumatic event, which causes the individual to experience intense fear and helplessness. The individual reexperiences the event, avoids any stimulus that could remind them of the event, and is in a hyperarousal state (B. Sadock, and Sadock, Virginia, 2003). A diagnosis of PTSD is established based on three clusters of symptoms, hyperarousal, numbing/avoidance, and re-experiencing, which are laid out in the DSM-TR-IV issued by the American Psychiatric Association. DSM-TR-IV stands for Diagnostic and Statistical Manual of Mental Disorders, text revision, 4th edition (Figure 1).

**Prevalence of PTSD among OEF/OIF Veterans**

Veterans face traumatic events such as combat where there is a risk of serious injury or death to themselves or their unit members. Due to this high-risk environment, the prevalence of PTSD among war veterans such as OEF/OIF veterans is higher than the general population, ranging from 16% to 39%. The large range may be due to different diagnostic and statistical methods. Some studies may focus on the U.S. Army while others may focus on all branches of the military. Studies may include service members presenting to Veterans Affairs medical offices where the prevalence is expected to be higher. A study conducted by Hoge et al. (2007) found that 16.6% of soldiers had PTSD after one year of returning from Iraq. The prevalence was 38% in OIF/OEF veterans that were seen at a Veterans Affairs Medical Center (Jakupcak, Luterek, Hunt, Conybeare, & McFall, 2008). Consistent with this finding, a study using the PTSD Checklist - Military Version (PCL-M), found that 39% of OIF/OEF veterans had PTSD in
a VA primary care clinic (McDevitt-Murphy et al., 2010). Although the prevalence of PTSD varies, it is evident that PTSD is common among OEF/OIF veterans. It is important for PAs to recognize the increasing number of OIF/OEF veterans presenting to health care offices as well as the high prevalence of PTSD among this population.

**Risk Factors of PTSD**

Demographic variables that increase the risk of PTSD are gender, age, marital status, and education. A recent study found that women were more likely to receive a diagnosis of depression, while men were more likely to receive a diagnosis of PTSD and alcohol use disorders. In addition, those who are African Americans were less likely to receive a diagnosis of depression. This study also examined age and found that older women and younger men were more likely to receive a diagnosis of PTSD (Maguen, Ren, Bosch, Marmar, & Seal, 2010). Those who had a lower level of education, were divorced, widowed, or never married, and younger in age were more likely meet criteria for PTSD (Booth-Kewley, Larson, Highfill-McRoy, Garland, & Gaskin, 2010).

Other factors that affect the risk of developing PTSD are branch of military service, war that veterans participated in, location of deployment, amount of combat exposure, and deployment stressors. Those who serve in the Marine Corps and Army are more likely to screen positive for PTSD compared to the Navy (Baker et al., 2009). Also, those who served in Iraq or Afghanistan had a higher prevalence of PTSD than veterans who served in other wars (Hawkins, Lapham, Kivlahan, & Bradley, 2010). Veterans who served in Iraq had the highest prevalence (Allison-Aipa, Ritter, Sikes, & Ball, 2010; Hoge et al., 2004). This may be due to the increased exposure of combat in Iraq. Another study that was conducted in U.S. Marines measured combat exposure level using self-assessment tools. The responses that were most associated with PTSD
was “Feeling I could be killed at any time,” “IED/booby trap exploding near you,” and “Having hostile reactions from civilians.” The stress of deployment also influenced the risk for PTSD. Those who had personal issues, problems with supervisors, or a perception of no privacy were more likely to screen positive for PTSD (Booth-Kewley et al., 2010).

**Important Factors Clinicians Need to Keep in Mind**

Undetected and untreated PTSD leads to significant negative consequences in physical, psychological, social, and behavioral functioning. Therefore, there are important factors that health care providers should know about OIF/OEF veterans and PTSD. First, PTSD is a complex disorder with three different clusters of symptoms: reexperiencing, avoidance/numbing, and hyperarousal. Veterans can present with a wide variety of complaints, which may make it more difficult for health care providers to appropriately identify and treat veterans.

Second, it is common for those with PTSD to have psychiatric and medical comorbidities. Comorbid psychiatric disorders such as major depression, generalized anxiety disorder, panic disorder, and agoraphobia are frequently found in those with PTSD (Magruder et al., 2005). PTSD is also linked to medical problems such as metabolic syndrome, which comprises of high levels of blood pressure, cholesterol, blood glucose, and waist-to-hip ratio (Heppner et al., 2009). It also has been found that veterans who are diagnosed with PTSD are at increased risk for hypertension, circulatory issues, digestive problems, nervous system diseases, and musculoskeletal diseases (Andersen, Wade, Possemato, & Ouimette, 2010). Since these comorbidities could overlap or mask physical complaints associated with PTSD, it may make it even more difficult to properly identify that PTSD is the underlying problem.

Third, there is a stigma associated with mental disorders in the OIF/OEF veteran population. A study found that soldiers and Marines who served in Iraq who met criteria for
PTSD, generalized anxiety, or major depression were two times more likely to report concern about stigma and other obstacles associated with access to mental health care. The most popular reason why veterans did not seek care was “I would be seen as weak” (Hoge et al., 2004). A few years later, another study found that those who had negative beliefs about mental health care or had a low perception of unit support were more likely to have stigma and barriers to care. Negative beliefs that were found to be associated were “therapy is not effective for most people,” and receiving….“therapy is a sign of weakness.” These beliefs prevented veterans from seeking medical care (Hoge et al., 2004; Pietrzak, Johnson, Goldstein, Malley, & Southwick, 2009a). As health care providers, it is important to realize veterans may be hesitant to talk about traumatic events due to embarrassment or perception of weakness. Therefore, they may present with physical complaints such as insomnia, headaches, or alcohol issues because it is easier to talk about physical problems than feelings. Physical complaints such as body pain, fatigue, headache, sleep disturbances, diarrhea, forgetfulness, and impaired concentration have been found to be prevalent among OEF/OIF veterans. Two-thirds of them had at least one of these and 75% had two or more of these symptoms (Amin, Parisi, Gold, & Gold, 2010). In addition, OEF/OIF veterans who experienced a traumatic event were more likely to have behavioral issues such as substance abuse (Baker et al., 2009) and problems with relationships (Meis, Erbes, Polusny, & Compton, 2010; Sayers, Farrow, Ross, & Oslin, 2009). Physical, behavioral, and social complaints are prevalent among OIF/OEF veterans and may be the clinical presentation of PTSD.

*In the case illustration above, John presents with symptoms not directly suggesting PTSD. The PA asks him about items on the DSM-IV-TR criteria and found that he meets criteria for PTSD. This is an example that emphasizes the importance of obtaining a thorough history.*
If the PA did not go into the social history, he or she may never have diagnosed John with PTSD. The PA may think that John is suffering from a sinus headache, allergies, or the common cold. John is suffering from PTSD and the negative effects associated with it such as insomnia, alcoholism, and headaches. These issues, in turn, affect his overall health and the readjustment period post-deployment.

The most important factor that health care providers should keep in mind is that PTSD and associated symptoms negatively affect the physical, psychological, behavioral, and social functioning of veterans, which make it harder for them to adjust to life back home. This clinical review will discuss the clinical presentations of OEF/OIF veterans suffering from PTSD. There is a focus on the impact PTSD has on OEF/OIF veterans after they return home from deployment stressing the importance of social support. The application of evidence-based treatments will also be addressed in order to provide veterans with an optimal treatment plan. Assessment tools used in the clinical studies reviewed are designed to assess severity of symptoms and efficacy of treatments (Table 2).
Methods

A literature review was done using online databases: PubMed, PILOTS, and MEDLINE. Search terms included “PTSD”, “insomnia”, “treatment of PTSD”, “OEF/OIF veterans”, “alcohol”, “headaches”, “SSRIs”, “cognitive-behavioral therapy”, “EMDR”, and “exposure therapy.” Inclusion criteria include publications between 1980 to present, men and women, OEF/OIF veterans, publications in English, veterans from past wars, other trauma-related populations such as abuse and car accidents, research on U.S. populations and populations outside of the U.S. that can be compared to or generalized to the U.S. population, first-tier research designs: experimental – cross sectional, and second-tier research designs: quantitative, qualitative. Exclusion criteria include case studies, articles from countries other than U.S. that cannot be compared to or generalized to the U.S. population, and articles published before the year 1980.
Sleep Disturbances and PTSD

Sleep disturbances are highly relevant to PTSD and are included in two clusters of PTSD symptoms, hyperarousal and re-experiencing. Hyperarousal symptoms such as difficulty falling or staying asleep, irritability, and reexperiencing symptoms such as recurrent distressing recollections of the event and recurrent dreams have an impact on sleep patterns. Since there are several PTSD symptoms linked to sleep disruption, it is likely for OIF/OEF veterans with PTSD to present with complaints of sleep disruption.

Prevalence of Insomnia Among OIF/OEF Veterans with PTSD

The prevalence of insomnia, difficulty initiating or maintaining sleep, is high among OIF/OEF veterans with PTSD. Forty one percent complained of insomnia immediately following post-deployment and 36% three months post-deployment. Those who have complaints of insomnia shortly after returning home (post-deployment) is more likely to have a higher score on the PTSD Checklist – Military version (PCL-M) at the 3-month follow up indicating a more severe case of PTSD. In addition, this study found that those who served in Iraq and Afghanistan had a statistically significant higher prevalence of insomnia than those who served elsewhere (McLay, Klam, & Volkert, 2010).

Factors that Predict Sleep Disturbances

Mental and physical problems. The presence of mental and physical issues affects the severity of sleep disturbances. A recent study focused on PTSD symptoms and sleep disruption among OEF/OIF veterans using the PTSD checklist and the Patient Health Questionnaire – 9 (depression items). Non-sleep PTSD symptoms were measured using the PTSD Checklist, civilian version, excluding items related to sleep disruption. The items that were related to sleep disruption on the PTSD Checklist, Civilian Version (PCL), were used to assess the level of
insomnia and nightmares. This study classified depression as those who met criteria using the Patient Health Questionnaire-9 excluding items associated with sleep disruption. The study found that those who had a diagnosis of depression were more likely to have moderate to severe insomnia. Severe non-sleep PTSD symptoms were also associated with moderate to severe nightmares. In addition, those who experienced pain that interfered with work were more likely to have severe insomnia and nightmares. Although pain was associated with sleep disturbances, pain was not related to sleep when demographics and non-sleep PTSD symptoms were controlled, which indicates that PTSD is a mediator between pain and sleep disturbances (Gellis, Gehrman, Mavandadi, & Oslin, 2010).

**PTSD and comorbid disorders.** It is common for those diagnosed with PTSD to have comorbid psychiatric disorders. A recent study examined the impact PTSD and comorbid psychiatric disorders had on sleep. Comorbid psychiatric disorders included in this study were panic disorder, major depressive disorder, generalized anxiety disorder, and alcohol dependence. Findings revealed that those who had PTSD and panic disorder most frequently complained of sleep disturbances such as nightmares and insomnia with 100% complaining of insomnia and 96% complaining of nightmares. PTSD and panic disorder may worsen anxiety symptoms (Leskin, Woodward, Young, & Sheikh, 2002). Although this study did not focus on war veterans, it is relevant. Many veterans have comorbid disorders and it is likely that those who have PTSD and panic disorder will complain of sleep problems more frequently than those with coexisting PTSD and major depressive disorder, generalized anxiety disorder, or alcohol dependence. Studies should be conducted on OEF/OIF veterans to see the association between PTSD and comorbidities and the impact they have on sleep impairment.
**Injury during combat.** Another factor that affects sleep is physical injury during combat. A study showed that an estimate of 83% of veterans that had neurocognitive deficits due to a mild traumatic brain injury had impaired sleep. All of those who had neurocognitive deficits had PTSD and 94% of those with PTSD had impaired sleep. Veterans with PTSD and neurocognitive deficits due to mild traumatic injury had more problems with sleep than veterans with PTSD and no neurocognitive deficits (Ruff, Ruff, & Wang, 2008). Another study found the interaction between PTSD and traumatic brain injury and the interaction between PTSD and pain were significant for sleep impairment. PTSD and pain independently affected sleep whereas traumatic brain injury did not (Lew et al., 2010). This is in contrast to other findings mentioned earlier, where pain was not independently associated with sleep disturbances (Gellis et al., 2010). However, the co-occurrence of PTSD with pain and PTSD with sleep disturbances are common; and these correlated factors play a role in the physical expression of complaints associated with PTSD.

**Protective Factors Minimizing Sleep Disturbances**

Social support and good coping skills have been shown to protect veterans from experiencing severe sleep problems. A study examined the relationship between PTSD, sleep problems, unit support, social support, and coping skills. The results revealed that OIF/OEF veterans with PTSD had sleep problems due to anxiety about being vigilant and having a lower perception of unit support. Unit support was assessed using the Unit Support Scale (USS), which measures the amount of support provided by unit members and leaders in the war zone setting. Veterans who received a higher degree of unit support had fewer sleep disturbances (Pietrzak, Morgan, & Southwick, 2010). Overall, this suggests the need for unit support and good coping skills in order to help relieve or prevent symptoms of sleep disturbances. Unit
support is important and education to the public on the benefits may improve sleep disturbances associated with PTSD. Also, learning good coping techniques will help U.S. service members to manage disturbing thoughts that are associated with the traumatic events seen in combat in a more positive manner. A more extensive discussion about social support will be addressed later.
Pain and PTSD

Pain can be a chronic problem that affects physical, psychological, and social functioning. It can be debilitating and lead to complications such as depression and substance use disorder. OEF/OIF veterans have a high prevalence of pain with approximately 47% of veterans reporting at least a mild level of pain and 28% with moderate to severe pain (Gironda, Clark, Massengale, & Walker, 2006). In a more recent study on OEF/OIF veterans, 28.9% had chronic widespread pain, which was defined as pain in all four quadrants of the body that lasted more than 3 months with a pain level of 3 out of 5, where 5 was “very severe.” In this study, those with chronic widespread pain were more likely to have PTSD or depression (Helmer, et al., 2009).

Headaches

There are many studies that focus on pain. However, pain is a broad symptom therefore this clinical review will focus specifically on headaches and PTSD among the OEF/OIF veterans. A recent study examined PTSD, physical injury, and substance abuse and how they are related to headaches. The main predictor of headaches was PTSD. Veterans with PTSD were four times more likely to have a headache. Those who had an injury during combat were 2.25 times more likely to report complaints of headaches and those who were positive for substance abuse were half as likely to complain of headaches (Afari et al., 2009).

Types of Headaches

PTSD and combat-related injury both independently predict headaches. A recent study found that veterans who suffered from both migraines and tension-type headaches are more likely to have PTSD, while those who suffered only from migraines were more likely to report physical injuries during combat (Afari et al., 2009). In addition, another study found that those
with episodic migraines had a higher lifetime and 12-month odds ratio of PTSD than those with chronic daily headaches (Peterlin et al., 2010). This may be due to the high exposure of combat and physical injury among those with migraines leading to a higher likelihood of PTSD.

**Mild Traumatic Brain Injury**

Another significant factor that was found to predict headaches among OEF/OIF veterans is mild traumatic brain injury. In addition to PTSD, traumatic brain injury is considered the other “signature injury” of OEF/OIF veterans. There is a strong association between these “signature injuries.” Approximately 44% of those who lost consciousness and 27.3% of those who had an altered mental status due to the mild traumatic brain injury met criteria for PTSD. Mild traumatic injury was associated with problems with physical functioning when mental disorders such as PTSD were present. It is important to note that even without a diagnosis of PTSD, mild traumatic brain injury was associated with headaches among those who lost consciousness (Hoge, 2008). A more recent study revealed a higher prevalence of PTSD among those who experienced a mild traumatic injury. Approximately 65% of veterans who experienced a mild traumatic injury had PTSD (Pietrzak, Johnson, Goldstein, Malley, & Southwick, 2009b). And 41% of U.S. soldiers that present to the health care office with headaches had a history of head or neck trauma while deployed in Iraq (Theeler & Erickson, 2009).
Alcohol Use and PTSD

Alcohol abuse is defined as the use of alcohol with impairment of one’s ability to fulfill obligations with school or work, legal involvement, social issues, or use of alcohol in dangerous situations. Alcohol dependence is defined as physiological tolerance to alcohol involving a large amount of time intoxicated or in withdrawal, and the persistent use of alcohol in spite of legal, social, medical, or occupational issues (Nolen-Hoeksema, 2008). It has been established that PTSD is prevalent among OIF/OEF veterans. There have also been many studies that found the prevalence of alcohol abuse to be significant. Factors that contribute to the high prevalence of alcohol use among OEF/OIF veterans are mental and physical health issues, age, race, gender, and military service characteristics such as branch of service and deployment. A recent study revealed that 40% of OIF/OEF veterans screen positive for potential hazardous alcohol use, 22% for possible alcohol use disorder, and 23% for binge drinking. This study used the Alcohol Use Disorders Identification Test-Consumption Items (AUDIT-C) in order to define potential hazardous alcohol use, alcohol use disorder, and binge drinking. Hazardous alcohol use was defined as a score of $\geq 4$ for men and $\geq 3$ for women on the AUDIT-C. Possible alcohol use disorder was defined as a score of $\geq 6$ for men and $\geq 4$ for women on the AUDIT-C. Binge drinking was defined as $\geq 6$ alcoholic drinks during one event at least every month for the past year (Calhoun, Elter, Jones, Kudler, & Straits-Troster, 2008). Another study examined data on 456,502 OEF/OIF veterans from Veterans Affairs and found that 11% had a diagnosis of alcohol use disorder (AUD), 5% had a diagnosis of drug use disorder (DUD), and 5% had a diagnosis of alcohol use disorder (AUD) and drug use disorder (DUD). These estimates may be under-reported due to stigma and lack of screening associated with drug abuse (Seal et al., 2011).
PTSD and alcohol misuse frequently co-occur and both independently have a negative impact on functioning (McDevitt-Murphy et al., 2010). Of the veterans who have a diagnosis of AUD, DUD, or both, 55-75% also had a diagnosis of PTSD or depression. In addition, those who had PTSD were four times more likely to have a diagnosis of AUD and three times more likely to have a DUD diagnosis (Seal et al., 2011). This is a higher statistic than an earlier study that reported that OEF/OIF veterans that had PTSD or depression were two times more likely to report alcohol misuse (Jakupcak et al., 2010). In addition, alcohol misuse has been found to be positively associated with PTSD symptoms (McDevitt-Murphy et al., 2010).

**Self-Medication Hypothesis**

An explanation of the positive correlation between the severity of alcohol use and PTSD symptoms may be veterans are more likely to use alcohol to alleviate distressing PTSD symptoms. The more distressing the symptoms are, the higher the likelihood of alcohol misuse. A study on alcohol use among the general population with PTSD found that about 20% of those with PTSD used alcohol, drugs, or both in order to relieve their PTSD symptoms. Those who use alcohol or drugs in order to relieve PTSD symptoms were more likely to have a lifetime history of alcohol use disorder (Leeies, Pagura, Sareen, & Bolton, 2010). This formulated the “self-medication” hypothesis.

Emotional and physical issues can be debilitating and make it difficult for veterans to adjust to life back home. Some may resort to alcohol in order to alleviate the suffering. Approximately 41% of U.S. veterans reported that they used alcohol or drugs in order to manage sleep disturbances such as nightmares and flashbacks, 59.4% used alcohol or drugs in order to deal with feeling stressed and depressed, and 64.6% used alcohol or drugs in order to feel more comfortable in social settings (Cucciare, Darrow, & Weingardt, 2010). Although there is
evidence of an association between sleep disturbances and alcohol use, many studies did not find a correlation between pain and substance use unless PTSD was involved. In a recent analysis of data from the National Comorbidity Survey Replication, those with migraines or chronic daily headaches did not abuse drugs unless PTSD or depression was involved (Peterlin et al., 2010). A possible explanation is that sleep disturbances are included in two clusters of PTSD symptoms and is part of the diagnostic criteria for PTSD and since PTSD is associated with alcohol use, it is not surprising that alcohol is used in order to relieve sleep disturbances. This may further explain why pain is not associated with alcohol use because it is not a specific component of the PTSD diagnostic criteria.

**Risk Factors for Alcohol Misuse, Abuse, and Dependence**

There are risk factors associated with alcohol use such as demographic variables. Many studies found that young, white, male OEF/OIF veterans who are not married are at the highest risk of misusing alcohol (Calhoun et al., 2008; Cucciare et al., 2010; Hawkins et al., 2010; Seal et al., 2011). Male OIF/OEF veterans are 3.3 times more likely to misuse alcohol than female veterans. Interestingly, male OEF/OIF veterans are also at a higher risk of misusing alcohol than non-OIF/OEF male veterans (Hawkins et al., 2010). Both active duty and reservists who were male were 1.5 to 2 times more likely to have an AUD or DUD diagnosis (Seal et al., 2011). Although the prevalence of alcohol misuse among female veterans is not as high as male veterans, a small study found that OIF/OEF female veterans that had PTSD were likely to misuse alcohol (Nunnink, Goldwaser, Heppner et al., 2010). This implies that PTSD also plays a role on the risk of alcohol use among female veterans. These demographic findings from studies on OEF/OIF veterans with PTSD are consistent with the general population with PTSD, which
found that unmarried people, males, non-blacks, and those between the ages of 20 and 29 were more likely to use alcohol and drugs in order to alleviate PTSD symptoms (Leeies et al., 2010).

In addition to demographic variables, studies have found that there was a significant difference in the use of alcohol based on branch of military service, active duty or reserves status, and deployment characteristics. Marines and soldiers in the Army are at a higher risk for alcohol misuse (Jakupcak et al., 2010; Seal et al., 2011). Those who are young and active duty were twice as likely to have an AUD diagnosis and five times as likely to have a DUD diagnosis. The National Guard soldiers and those in the reserves were more likely to have a DUD diagnosis if they were younger (Seal et al., 2011).

Characteristics of deployments have an impact on the risk of alcohol misuse such as combat experiences, location of deployment, and length of time deployed. A recent study on 1,120 U.S. soldiers who were part of combat infantry teams found that the soldiers have approximately 17 combat experiences during deployment. The number of combat experiences has a large impact on alcohol use and misconduct. This study found that 25% screened for alcohol misuse when surveyed 3 to 4 months after returning from deployment. Those who experienced an event involving a threat of death or injury were more likely to misuse alcohol while those who experienced atrocities, seeing violence among locals or witnessing cruel treatment towards civilians, were more likely to have behavioral issues related to alcohol such as drinking and driving, receiving a DUI, or missing work. Combat experiences independently have an effect on alcohol use even in the absence of mental health problems (Wilk et al., 2010).

The length of time and place of deployment also plays a role in the risk of alcohol use. It has been mentioned that those who were deployed to Iraq had a higher prevalence of PTSD compared to those who were deployed to Afghanistan. This holds true for alcohol misuse as
well (Allison-Aipa et al., 2010). PTSD and alcohol use go hand in hand and both are related to exposure to high combat intensity. In addition, the length of time that a veteran is deployed affects their risk of alcohol misuse. U.S. Army soldiers who were deployed to Iraq or Afghanistan for seven months or more were significantly more likely to misuse alcohol (Allison-Aipa et al., 2010). This may be due to a higher chance of combat exposure with longer deployments, placing them at a higher risk for PTSD.
**Adjustment to Life Back Home**

Post-deployment is a difficult period of readjustment for many veterans. What constitutes as healthy adjustment may differ between veterans. For example, one veteran may consider spending quality time with family and resuming his or her role in the family is healthy readjustment. Another veteran may define healthy readjustment as going back to work and being able to perform previous duties without difficulty. Although there are many different interpretations of healthy adjustment for each veteran, the common denominator is being able to physically and psychologically function without social or behavioral impairment.

Factors that help with the readjustment period are psychological resilience and social support. Psychological resilience is defined as one’s ability to adapt to significant stressors. A recent study found that unit support and post-deployment social support was associated with increased resilience. OEF/OIF veterans who had unit support demonstrated higher resilience, which was associated with a decrease in severity of PTSD symptoms (Pietrzak, Johnson, Goldstein, Malley, Rivers, et al., 2009). However, even with protective factors such as psychological resilience and support, physical and mental issues may make the readjustment period difficult.

Interestingly, the different clusters of symptoms that constitute PTSD, (hyperarousal, reexperiencing, and numbing/avoidance) each have an impact on the readjustment period post-deployment. OEF/OIF veterans suffering from full PTSD and partial PTSD have been shown to also encounter difficulty adjusting to civilian life. Those with full PTSD or partial PTSD are likely to experience interpersonal problems with family, friends, spouses, co-workers, and problems with work, bills, and money (Pietrzak, Goldstein, Malley, Johnson, & Southwick, 2009). Veterans do not have to be diagnosed with PTSD in order to have these problems. For
example, someone may be suffering from hyperarousal symptoms such as insomnia may have impairment with functioning even though they do not meet criteria for PTSD.

**Hyperarousal Cluster**

**Physical problems.** Symptoms of hyperarousal include hypervigilance, difficulty falling or staying asleep, and irritability. This cluster has a large effect on overall functioning due to physical and cognitive issues such as fatigue and difficulty concentrating (Shea, Vujanovic, Mansfield, Sevin, & Liu, 2010). Mentioned earlier, there is an association between pain and PTSD among veterans. Those who suffer from pain are more likely to have episodes of exacerbating hyperarousal symptoms, which worsens overall daily functioning (Cho, Heiby, McCracken, Moon, & Lee, 2011).

**Employment.** Physical issues may lead to problems with social responsibilities such as work. OEF/OIF veterans with PTSD have more sick visits, absence from work, and a lower overall health rating (Hoge, Terhakopian, Castro, Messer, & Engel, 2007). Employment is a critical part of reintegration into civilian life because it not only provides financial stability, but it also gives veterans a sense of social acceptance as they adjust to life as a civilian.

As more OEF/OIF veterans return home, many may encounter difficulty finding and maintaining employment especially if they have PTSD. OEF/OIF veterans with PTSD are more likely to have problems with work output and productivity than those without PTSD. The severity of PTSD correlates with problems with mental-interpersonal demands, time management, work output, and physical demands during work. Unemployed veterans are more likely to be unmarried, have problems with mental and physical functioning, and feel as if they do not have enough money to support themselves (Adler et al., 2011). This association between employment and PTSD is consistent with past studies in Vietnam veterans (Smith, Schnurr, &
Unemployed veterans who served after the Vietnam War era are more likely to have problems with employment than Vietnam veterans (Resnick & Rosenheck, 2008). The Department of Veterans Affairs has developed a rehabilitation program called Veterans Health Administration Compensated Work Therapy (CWT), a vocational rehabilitation provided to veterans to assist them in searching for employment. The program has two major components, the transitional work experience (TWE) and the supported employment (SE). The difference is the veterans are paid by CWT with the TWE component, whereas the employer directly pays the veterans with the SE component. When comparing veterans with PTSD and veterans without PTSD, those with PTSD were 19% less likely to be employed after participation in the CWT. Those with PTSD also worked fewer days in the last 90 days of CWT (Resnick & Rosenheck, 2008). It has also been found that unemployed veterans with PTSD are more likely to have anger issues than employed veterans. This may be related to the severity of PTSD and the frustration associated with unemployment (Frueh, Henning, Pellegrin, & Chobot, 1997).

**Anger and Abuse.** PTSD is a complex disorder with many different types of symptoms. It makes it difficult for veterans to readjust to life at home, which may lead to feelings of frustration and anger. Many studies have found a strong association between PTSD and anger. However, not many studies have discussed why veterans with PTSD are angry. Some possible explanations could be the overwhelming negative effects of PTSD, unexpected difficulty of the readjustment period, stress of employment, finance, and family.

Research studies conducted on OEF/OIF veterans revealed a strong association between anger problems and PTSD (Elbogen et al., 2010; Jakupcak et al., 2007; Taft et al., 2009; Teten et al., 2010). A recent study found that not surprisingly, veterans who reported direct or indirect...
killing of others during deployment were more likely to have PTSD. Direct and indirect killing of others was determined by asking veterans the following question, “During combat operations did you kill others in combat (or have reason to believe that others were killed as a result of your actions)?” The group of veterans who answered “yes” were not only more likely to have PTSD, but were more likely to have anger issues and relationship problems (Maguen, Lucenko et al., 2010). This suggests that the deployment experience plays a major role in the development of anger in veterans with PTSD. Veterans may experience situations that no one outside of the military may understand, leading to feelings of isolation and frustration. It is important to note that those with sub-threshold PTSD have also been found to have anger issues and hostility (Jakupcak et al., 2007). Even though they do not meet criteria for a diagnosis of PTSD, they can still face anger related obstacles post deployment.

Some veterans may not meet criteria for PTSD, but those who have anger issues may have high levels of hyperarousal symptoms of PTSD, which have been found to be associated with anger. A recent study focused on the association between PTSD and anger among male veterans that presented to a Veteran Affairs PTSD clinic. Hyperarousal symptoms of PTSD were the strongest predictor of aggression, defined as destruction of property, threats of violence with or without a weapon, and physical confrontation. Approximately 33% of veterans who were in an intimate relationship were physically aggressive in the past year, while 91% were psychologically aggressive. Symptoms of arousal and lack of control were significant for physical and psychological aggression among those in a intimate relationship (Taft et al., 2009). Another study on veterans who have served since September 11, 2001, had similar findings. Hyperarousal symptoms of PTSD were associated with aggressive impulses, difficulty managing anger, and trouble controlling violent behavior such as hitting someone. These factors were
measured using the Symptom Checklist-90 Hostility subscale, which asked veterans to rate items on a scale of 0 (not at all) to 4 (extremely). In order to make sure that these measures of anger and hostility were not due to irritability, a hyperarousal symptom, post hoc analyses and multivariate analyses omitted irritability and found that the other hyperarousal symptoms such as sleep problems, difficulty with concentration, hypervigilance, and exaggerated startle response, were all associated with anger and hostility (Elbogen et al., 2010). These findings are consistent with studies on other war veterans, including those from other countries such as Bosnia and Herzegovina (Novaco & Chemtob, 2002; Sakusic et al., 2010; Savarese, Suvak, King, & King, 2001).

**Avoidance/Numbing Cluster**

**Relationships.** The relationships between OEF/OIF veterans and their families may go through a period of instability due to deployment. For example, OEF/OIF veterans with PTSD are more likely to have relationship problems after deployment (Meis et al., 2010; Sayers et al., 2009). Hyperarousal symptoms are associated with aggression and anger, which leads to problems with intimate relationships. In addition, avoidance/numbing symptoms have been found to be associated with negative effects on interpersonal relationships (Shea et al., 2010), including family relationships (Evans, Cowlishaw, & Hopwood, 2009; Khaylis, Polusny, Erbes, Gewirtz, & Rath, 2011; Sayers et al., 2009).

Returning OEF/OIF veterans suffering from PTSD are more likely to feel like a guest in their own home and have an unclear understanding of their role in the family. Children may be confused by the veteran’s mood swings and therefore may be hesitant to show warmth and express love (Sayers et al., 2009). Relationship issues with family play a large role in the struggle for healthy readjustment.
A recent study with National Guard soldiers who were deployed to Iraq, examined parenting behaviors and couple adjustment after one year of returning from deployment and found that increases in PTSD symptoms were found to be associated with lower levels of effective parenting and lower levels of healthy couple adjustment. The study suggested that symptoms of numbing and avoidance may lead to detachment from family activities and parenting responsibilities, leading to perceptions of impaired parenting behaviors (Gewirtz, Polusny, DeGarmo, Khaylis, & Erbes, 2010). This study is consistent with results found in Vietnam veterans, which revealed that an increase in PTSD symptomatology, specifically numbing and avoidance symptoms, were strongly associated with lower parenting satisfaction (Samper, Taft, King, & King, 2004).

Factors that affect couple relationships are sexual problems, sleep disruption, and symptoms of dissociation (Goff, Crow, Reisbig, & Hamilton, 2007). A more recent study found that numbing symptoms, which include detachment from others, loss of interest, and restricted range of affect, were significant in predicting sexual problems among OEF/OIF veterans. Veterans who had sexual problems scored higher on the Davidson Trauma Scale, which indicated a higher severity of PTSD (Nunnink, Goldwaser, Afari, Nievergelt, & Baker, 2010). These findings may partly explain problems encountered in intimate relationships. It may be appropriate to further suggest that sexual problems may lead to or exacerbate feelings of frustration and anger, resulting in serious consequences such as physical and psychological abuse.

**Alcohol and tobacco use.** A recent study reported that the numbing symptoms of PTSD were associated with alcohol misuse (Jakupcak et al., 2010) and heavy smoking among OIF/OEF veterans (Cook, Jakupcak, Rosenheck, Fontana, & McFall, 2009). These problems affect not
only the health of veterans, but it also has an impact on their overall functioning. Alcohol use has also been associated with reexperiencing and hyperarousal symptoms of PTSD and will be discussed later.

A study on Vietnam veterans with PTSD found that those who smoked cigarettes have increased heart rates, anger and hostility issues, and more problems with depression and anxiety (Beckham, Gehrman, McClernon, Collie, & Feldman, 2004). Cigarette smoking affects the health of veterans as well as loved ones. The adverse effects of cigarette smoke are associated with serious illnesses such as lung cancer. Those who are exposed to secondhand smoke are at risk for developing adverse effects as well. Cigarette smoking is also associated with increased anger. Anger is a serious issue that may result in physical or psychological abuse among those closest to the veteran, which was discussed in the “Hyperarousal Cluster” section. In addition to feelings of anger, being depressed may also lead to relationship problems and has been linked to suicidal ideation among OEF/OIF veterans (Guerra & Calhoun, 2011).

Suicidal ideation. Those who suffer from PTSD and depression have an increased risk of suicidal ideation than those without co-occurring depression. This is significant because major depressive disorder commonly co-occurs with PTSD specifically the cognitive-affective symptoms of depression. This cluster involves feeling depressed constantly or feeling abnormal guilt (Guerra & Calhoun, 2011). Veterans may be depressed due to the difficult readjustment period, negative effects of PTSD, or feelings of social isolation. Many may experience significant feelings of guilt due to a loss of a unit member during combat or the effect that PTSD has on their family. There are many reasons why veterans may feel depressed and guilty. Support is important in order to help those who have ideas about suicide.

Re-experiencing Cluster
The difficult time adjusting to civilian life and the mental and physical struggle of PTSD may eventually lead veterans to resort to alcohol or drug abuse. Alcohol use has an effect on energy, emotions, social functioning, pain, and overall health (McDevitt-Murphy et al., 2010). Although it may seem like it temporarily relieves symptoms, alcohol misuse has an effect on interpersonal relationships and social responsibilities such as work and school.

**Self-medication.** Alcohol misuse has been associated with all the symptom clusters of PTSD. However, reexperiencing symptoms have been indicated as the main cluster associated with alcohol. The cluster of reexperiencing symptoms of PTSD have been associated with alcohol problems among Kosovo peacekeepers (Maguen, Stalnaker, McCaslin, & Litz, 2009) and is true in OEF/OIF veterans as well (Pietrzak, Goldstein, Malley, Rivers, & Southwick, 2010). There is also a strong association between major depression and alcohol misuse (Hoge et al., 2004). A recent study found that veterans use alcohol in order to relieve distressing traumatic memories or problems with insomnia, nightmares, depression, social discomfort, and stress (Cucciare et al., 2010).

**Effect on relationships and employment.** Alcohol misuse has negative effects on interpersonal and social functioning regardless of why veterans decide to use alcohol. A study on Vietnam veterans found that those who had greater hyperarousal symptoms and drink heavily were found to have a higher level of physical violence towards their partner (Savarese, Suvak, King, & King, 2001). More studies should be conducted on OEF/OIF veterans in order to determine the prevalence of physical and psychological abuse in relation to alcohol use as well as the association between specific PTSD cluster of symptoms and alcohol misuse.

Alcohol can make searching and maintaining a job difficult due to a decline of physical and social functioning. Alcohol misuse affect work performance by having a negative effect on
mental-interpersonal demands, time management, work output, and physical demands (Adler et al., 2011). Unemployment may then lead to other issues such as financial instability, family detachment, stress, and decline in overall health.

Social Support

PTSD has many dimensions that are interrelated, which makes adjustment to life post-deployment difficult. An important factor that helps veterans adjust to civilian life is social support. Social support is the comfort given to an individual physically and emotionally by a community of people such as family, friends, coworkers, and unit members. The support that a veteran and their family receive is very powerful in the period of readjustment post-deployment. There are many programs, services, and websites devoted to provide veterans and their families support during the time of deployment as well as before and after. For example, “Military Homefront” is a Department of Defense website that provides veterans and families information about assistance with child care, housing, resources for deployment support, and much more (Military Homefront, 2011). The U.S. Department of Veteran Affairs also has a website that has numerous resources for veterans and families including the Fisher House Program, which provides family with homes at no cost near the medical center that the veteran is receiving medical care (Fisher House, 2011; U.S. Department of Veterans Affairs [VA], 2011). This is a great way for families to be with their veteran during treatment. It also provides the veteran the support, which has been shown to positively affect the prognosis in PTSD. Other great websites include www.militaryone.com, which has a section discussing what spouses of veterans can expect when their veteran returns home. Education is important and may lead to more support and understanding for both the veteran and family. These various services and resources will
assist veterans and their families as they go through the reintegration period post-deployment. It is also important that clinicians reach out to not only veterans, but also their support system.

Social support has been found to be a “psychosocial buffer” between PTSD and psychosocial obstacles such as issues with reconnecting with family members and peers, having financial stability, or functioning in regards to work and school (Pietrzak, Johnson, Goldstein, Malley, & Southwick, 2009c). Every PTSD cluster of symptoms was found to affect relationships in some way. The negative effects of PTSD may lead to family members feeling overwhelmed resulting in a withdrawal of support for the veteran. This leads to a poorer prognosis of PTSD. Therefore, it is important that veterans experience social support in order to manage PTSD in a more positive approach. Social support has been found to possibly improve the prospects of PTSD during treatment (Evans, Cowlishaw, Forbes, Parslow, & Lewis, 2010; Evans et al., 2009).

In a longitudinal analysis of family functioning and PTSD, veterans received a cognitive-behavioral therapy that lasted for twelve weeks. Veterans were assessed at three different time periods. The first assessment was pre-treatment. The second assessment was at three months, the end of treatment. The third assessment was at nine months. Results revealed that poor family functioning at pre-treatment predicted symptoms of reexperiencing, avoidance, and hyperarousal three months later. Poor family functioning at three months predicted symptoms of hyperarousal and avoidance nine months later. Problems with family functioning have an effect on the course of PTSD during and after treatment (Evans et al., 2010). This emphasizes the importance of social support.
Major Treatments for PTSD

PTSD is a complex disorder with many dimensions. Due to multiple symptoms associated with PTSD, patients present differently and treatment models may be complex. PTSD may co-occur with other medical and psychiatric problems, which may require intervention by specialists, making communication among providers essential. The use of psychotherapy and pharmacotherapy are common for treatment of PTSD. In particular, cognitive-behavioral therapy (CBT), eye movement desensitization and reprocessing (EMDR), and selective serotonin reuptake inhibitors (SSRIs) are considered first-line treatment options. Both forms of treatment have been widely studied and revealed strong evidence that support the use of these treatments for PTSD.

Psychotherapy

**Cognitive behavioral therapy.** Cognitive therapy is a structured, individualized therapy used to deal with maladaptive thoughts that are distressing. The goal of cognitive therapy is to recognize and modify cognitive misrepresentations that cause specific symptoms. The therapy involves eliciting cognitive distortions and forming alternative explanations for the cognitive distortions. The goal of behavioral therapy is to help patients recognize their cognitive distortions and learn ways to manage their problems in a healthier manner (Sadock & Sadock, 2007). Cognitive-behavioral therapy (CBT) usually lasts 12 weeks with weekly meetings between patient and clinician, usually a psychologist or psychiatrist. The patient is instructed to recall distressing thoughts and classify them into those that cause them the most anxiety. The therapy includes the use of relaxation techniques so the patient is able to have more control over their anxiety. The clinician will guide the patient when they begin to have maladaptive ways of dealing with distressing thoughts. The patient repeatedly visualizes the traumatic memory,
which in turn makes them deal with their overwhelming feelings that cause them significant distress (Nolen-Hoeksema, 2008).

**Exposure therapy.** Exposure therapy is a form of CBT that has been found to be effective and is commonly used in the treatment of PTSD. Based on Foa et al. (2007), prolonged exposure (PE) therapy involves 90-minute, weekly sessions including education about PTSD, breathing retraining, an assessment of anxiety level, imaginal exposure, programmed practice, and *in vivo* exposure. Anxiety level is assessed using the Subjective Units of Distress scales, which involves a Likert-type scale with “0” indicating the patient is calm and “8” indicating the patient is extremely terrified. Based on patient’s history of trauma and feelings, an exposure therapy scene is developed involving the most disconcerting picture. This scene is used as an imaginal exposure under the supervision of the clinician. Imaginal exposure is a technique used to expose the patient to the distressing event. Programmed practice involves homework assignments for the patient to complete in between sessions and it includes tasks such as watching war movies or talking about war experiences with loved ones. *In vivo* exposure is where the patient is directly dealing with a person, place, or thing that reminds them of the traumatic event that causes significant distress. For example, the stimulus may be crowds or going to the airport. This is also done under the supervision of the clinician. Every session is videotaped allowing the patients to watch it, which provides additional exposure to the trauma (Foa, 2007; Turner, Beidel, & Frueh, 2005).

Veterans Affairs Medical Centers (VAMC) will see an increasing number of OEF/OIF veterans diagnosed with PTSD. PE therapy has been tested in OEF/OIF veterans and was found to be effective. After treatment, scores on the PTSD Checklist-Military Version were decreased significantly post-treatment. In addition, the Beck Depression Inventory-II scores, which
measure the severity of depression, were decreased post-treatment. PE has a positive effect on those with PTSD and depression. Also, the study revealed that PE could be effectively executed in the VAMC setting, which is promising since this is where most veterans will present or be referred to after presenting to other primary care clinics (Tuerk et al., 2011).

Another recent study focused on the efficacy of exposure therapy among veterans specifically female veterans. The study compared the effects of prolonged exposure therapy to another type of therapy called present-centered therapy, which is often used in Veterans Affairs for treatment of PTSD. Present-centered therapy focuses on current issues of PTSD and no exposure therapy is conducted. Present-centered therapy was found to be inferior to prolonged exposure therapy in female veterans. Those who received PE therapy were more likely to lose a PTSD diagnosis, be in total remission, have decreased anxiety, and have improved quality of life post-treatment. Although PTSD Checklist scores were decreased in both forms of treatment, it was lower for those who received PE therapy. It is important to note that the most distressing traumatic memory in the participants in this study was sexual trauma, which is prevalent among female veterans (Schnurr et al., 2007). There is an increasing effort made by the U.S. Veterans Health Administration to propagate the use of PE therapy among veterans due to its success. The effectiveness of PE therapy will be further discussed in the “EMDR versus Other Cognitive-Behavioral Therapies” section.

**Cognitive processing therapy.** Cognitive processing therapy is a specific form of therapy involving cognitive and exposure components with twelve sessions consisting of education on PTSD, identification and modification of maladaptive thoughts, exposure to traumatic memories, recognition of feelings during the recollection of trauma, and the use of worksheets in order to change maladaptive cognition. This form of therapy was tested in veterans and found to be
effective in treating PTSD. There was a significant decrease in PTSD severity, specifically symptoms of reexperiencing and emotional numbing. Other positive results from this therapy included improvements in depression, anxiety, emotional functioning, issues with guilt, and social adjustment (Monson, et al., 2006).

**Trauma management therapy.** A recent study explored whether a multidisciplinary CBT would have more positive results compared to exposure therapy alone. Trauma Management Therapy (TMT) consists of exposure therapy with a social and emotional rehabilitation (SER) component. Exposure therapy involves the components mentioned earlier. SER involves four parts: social environment awareness, interpersonal skills enhancement, anger management, and veteran’s issues management. Strategies used are instruction, modeling, behavioral rehearsal, corrective feedback, positive reinforcement, programmed practice, and flexibility exercises. Instruction involves teaching the verbal and nonverbal cues used in social behavior followed by modeling by the clinician of how the behavior is carried out. Behavioral rehearsal allows veterans to practice under the supervision of the clinician who provides appropriate feedback and positive reinforcement. This is important because many veterans may feel discomfort with behavioral rehearsal. Programmed practice is homework in between sessions that allow veterans to be exposed to stimuli such as watching war movies. The exercise should be enough to expose the veteran to a distressing stimulus, but not so overwhelming that the veteran is set up for failure. Flexibility exercises are completed outside of therapy sessions and involve the veteran formulating different ways to respond to social situations. These assignments are reviewed and feedback is given to each individual.

TMT was compared to exposure therapy and was found to have more positive results among a sample of Vietnam veterans. Both forms of therapy decreased PTSD severity,
nightmares, flashbacks, and verbal rage. However, those who received the Trauma Management Therapy had decreased anxiety between pre- to mid-treatment, whereas the exposure therapy group had decreased anxiety between mid- to post-treatment. TMT may be reducing anxiety more quickly. Also, the TMT participants attended more weekly social activities and this was noted after the SER component of TMT, which suggests that SER improved social functioning among veterans. This study is consistent with past studies that exposure therapy is effective in veterans with PTSD and also revealed that the social and emotional rehabilitation portion of TMT was significant in increasing social and emotional functioning (Beidel, Frueh, Uhde, Wong, & Mentrikoski, 2011). A few studies have found TMT to be effective in Vietnam veterans (Beidel et al., 2011; Frueh, Turner, Beidel, Mirabella, & Jones, 1996). However, studies involving Trauma Management Therapy should be conducted on OEF/OIF veterans to assess its effectiveness for treatment of combat-related PTSD.

**Virtual reality exposure therapy.** A new development in exposure therapy called virtual reality exposure therapy uses technological advances to create 3-D virtual images that are used during the exposure therapy sessions. The *Virtual Iraq* therapy system was developed to create images resembling what service members experience when deployed in Iraq. The current research shows that this form of therapy has positive results with a decrease in PTSD symptoms, depression, and anxiety. However, virtual reality exposure therapy is relatively new so more research is needed to test its effectiveness in the treatment of PTSD among those who served in Iraq and Afghanistan (Rizzo et al., 2009; Rizzo et al., 2010).

**Couples and family-based therapies.** The majority of OEF/OIF veterans have concerns about life after deployment such as their ability to manage emotions and their relationship with spouses and children. A study revealed that veterans have a preference for therapy that includes
their family instead of individual therapy (Khaylis et al., 2011). There have been a few clinical reviews discussing the application of behavioral couple therapy for returning veterans and their partners (Erbes, Polusny, Macdermid, & Compton, 2008; Monson, Fredman, & Adair, 2008; Sayers, 2011). Preliminary results among Vietnam veterans found that there was some improvement in PTSD symptoms and significant improvement in depression, anxiety, and social functioning. The spouses reported improvements in relationship satisfaction, but the veterans did not (Monson, Schnurr, Stevens, & Guthrie, 2004). More research should be conducted to examine the effectiveness of behavioral couples therapy in veterans and their significant others. In the meantime, the addition of family-based therapy to individualized therapy may improve outcomes from an interpersonal relationship standpoint, but it should not replace individualized therapy for the treatment of PTSD.

**Eye movement desensitization and reprocessing (EMDR).** Eye movement desensitization and reprocessing is a form of therapy created by Francine Shapiro that uses eye movements in order to assist in cognitive processing of traumatic memories. The therapy involves eight phases. Phase one involves eliciting a history from the patient and developing a plan of treatment. Phase two is the preparation phase and involves education of PTSD and setting expectations. Phase three involves recalling the distressing memory while measuring the level of anxiety and distress using the Subjective Unit of Disturbance (SUD) scale, where 0 is “neutral” and 10 is the “highest level of disturbance. Phase four involves the patient recalling the distressing image and the associated feelings while following the therapist’s finger with their eyes for approximately 15 seconds. Phase five involves forming new positive perception of the memory. Phase six involves asking the patient if there is any tension felt in the body while focusing on the image and positive thoughts. Phase seven involves the therapist determining if
the response was processed adequately. Phase eight involves reevaluation to assess treatment response. The eight phases can be over a period of a few sessions (Shapiro & Maxfield, 2002).

**Effectiveness of EMDR in civilians.** EMDR has been found to be effective in the treatment of PTSD in the civilian population. A recent study focused on the effect that EMDR had on PTSD resulting from occupational health hazards. The participants were public transportation workers who either witnessed a “person under train” accident or were assaulted during work. Participants were randomized into the EMDR group or the waiting list group. The waiting list group served as the control group. The treatment involved five 90-minute sessions during a 2-month period. Assessment was done before and after treatment. Results revealed that 67% of the EMDR participants and 11% of the waiting list participants did not have a PTSD diagnosis based on DSM-IV criteria post-treatment. This is statistically significant. However, this study was limited due to a small sample size of 24 (Hogberg et al., 2007).

Hogberg et al. furthered their research by exploring the maintenance of the positive results obtained with EMDR at a 35-month follow up. The participants in the prior study were compared to a controlled group, which consisted of non-symptomatic subjects. Results revealed that 60% of the PTSD group no longer met criteria for PTSD immediately post-treatment, 70% at the 8-month follow up, and 65% at the 35-month follow up. In addition, there were significant changes in the Global Assessment of Functioning scores with improvement seen in 55% at post-treatment, 65% at 8-month follow up, and 65% at the 35-month follow up. There was also improvement in anxiety and depressive symptoms at the 35-month follow up. It is important to note that of those who no longer had a diagnosis of PTSD, 83% had full working capacity at the 35-month follow up. Again, this study was limited due to a small sample (Hogberg et al., 2008). Although this study focused on public transportation workers, the results may be applicable for
the treatment of PTSD in war veterans as well. The participants demonstrated improved functioning including working capacity. This may be beneficial for veterans who have difficulty readjusting to their previous employment post-deployment. EMDR may help veterans gain full working capacity again. The effectiveness of EMDR will be discussed further in the “EMDR versus other cognitive-behavioral therapies” section.

**Effectiveness of EMDR in military population.** There have not been any studies on the effectiveness of EMDR on OEF/OIF veterans. Therefore, it is difficult to assess the applicability of EMDR to this population. However, due to the positive results seen among other veteran populations, it provides promising information that EMDR may benefit OEF/OIF veterans in their struggle with PTSD.

In a small study on war veterans who had PTSD, EMDR was effective in the treatment of combat-related PTSD. EMDR participants had lower scores on the Mississippi Scale for Combat Related PTSD, PTSD Symptoms Scale, Spielberger State-Trait Anxiety Inventory, and Beck Depression Inventory post-treatment, indicating decreased PTSD symptoms, anxiety, and depression (Carlson, Chemtob, Rusnak, Hedlund, & Muraoka, 1998). This is significant because anxiety and depression commonly co-occur with PTSD. EMDR has potentially multiple benefits that may allow veterans to function in a more positive manner.

There have been a few studies conducted on the effectiveness of EMDR in Vietnam veterans with PTSD. EMDR is found to be the most effective treatment when compared to biofeedback and relaxation training (Silver, Brooks, & Obenchain, 1995). Biofeedback is defined as techniques used to change processes of the body that are distressing (Nolen-Hoeksema, 2008). Pitman et al. (1996) conducted a study on Vietnam veterans who were suffering from chronic PTSD and found that EMDR improved symptoms of PTSD, which was
measured using the Impact of Event Scale (IES). The IES assesses experiences of intrusion and avoidance after a traumatic event. The study compared EMDR with eye movements and EMDR without eye movements. The EMDR group with eye-fixed therapy focused straight ahead and tapped their fingers. Results revealed that there was a slightly more improvement noted among the group that received the eye-fixed therapy (Pitman et al., 1996).

Another study further analyzed the results obtained from Pitman et al. (1996) to determine if the treatment gains were maintained after five years. It was not mentioned if these participants were being followed before the five-year follow up. The study compared the participants in the previous study to a matched group of veterans who did not receive EMDR acting as the control group. At the five-year follow up, the study found that there was a significant increase in the Clinician-Administered PTSD Scale (CAPS) scores and the Symptom Checklist 90-Revised Global Severity Index (SCL-90-R GSI) scores in both the EMDR and the control group, indicating a worsening of PTSD symptoms. This implies that the benefits seen post-treatment with EMDR did not last and EMDR is not a treatment that cures PTSD. The results obtained from this study are noteworthy. However, the sample size of this study was small and more studies are needed in order to determine the long-term benefit of EMDR (Macklin et al., 2000).

EMDR has recently been studied on German soldiers with PTSD and those who received EMDR treatment had a 30.5% decrease in stress levels based on the IES and a 35.1% decrease in stress levels based on the Post-traumatic Stress Scale. EMDR treatment was conducted twice a week and lasted over an average period of 68 days. The researchers mentioned that German soldiers faced lower intensity of trauma compared to other military forces; therefore, they are expected to have a better prognosis of PTSD. This was suggested when the researchers found
that the EMDR participants who had confronted death during their traumatic experience had an increased IES score after an average of 29 months, indicating they had worsening of PTSD symptoms. Those who did not encounter a traumatic event involving death had a decreased IES score after the average 29-month follow up (Zimmermann, Biesold, Barre, & Lanczik, 2007). This implies that the threat of death to oneself or others experienced in combat has an effect on the treatment outcome of EMDR. EMDR may be more beneficial for those OEF/OIF veterans that had a lower amount of exposure to combat or have subclinical PTSD.

Additional benefits of EMDR. A recent study on civilians with PTSD found that trauma-related, prolonged anger, and guilt improved with EMDR therapy. In addition to EMDR, prolonged exposure and relaxation training had a therapeutic effect on anger and guilt. The relaxation training consisted of three different exercises. This training took about 60 minutes and involved the therapist reading a script that was taped. The participant then listened to the taping for an hour each day. There was no statistically significant difference between the three treatments on its efficacy on the treatment of anger and guilt related to trauma. The positive treatment gains seen with these treatments were not affected by the severity of anger and guilt before treatment. This suggested that these treatments are beneficial for problems with anger and guilt regardless of severity (Stapleton, Taylor, & Asmundson, 2006). This is a noteworthy finding because anger and guilt issues may expand into issues with relationships, employment, PTSD, and other comorbidities. Due to the high prevalence of anger and guilt issues among OEF/OIF veterans suffering from PTSD, it is reassuring to know that there are three treatment options that may alleviate their anger and guilt. In addition, these treatments especially EMDR and PE are effective in the treatment of PTSD. Studies should be conducted on the effect of
EMDR on feelings of anger and guilt among OEF/OIF veterans because this study was conducted on civilians with the majority of the sample being female.

EMDR is also beneficial in improving sleep quality and overall quality of life. Sleep disruption affects overall functioning and may exacerbate PTSD. A recent study focused on the effects that EMDR had on associated PTSD symptoms such as sleep problems, anxiety, depression, fatigue, stress, decreased quality of life, and overall well being. Although the study was small, it revealed significant findings that EMDR does improve sleep quality, reduce symptoms of depression and anxiety, improve energy, lower stress, increase quality of life, and improve overall well being. The study further explained that when the traumatic memory loses its negative features, the patient had lower arousal symptoms, which in turn improved sleep efficiency as well as improved general, social, and emotional functioning. The patient had an improved quality of life (Raboni, Tufik, & Suchecki, 2006).

**EMDR versus cognitive-behavioral therapy.** There have been mixed results presented in several reviews whether EMDR has the same or greater efficacy compared to CBT. A recent publication discussed PTSD treatments for returning veterans and concluded that EMDR is not significantly different than CBT based on positive outcomes (Sharpless & Barber, 2011). Another review on PTSD treatment reported conflicting results. Some have found CBT to be more efficacious post-treatment and long term while others have found that EMDR is just as effective (Choi, Rothbaum, Gerardi, & Ressler, 2010). A recent meta-analytic study focused on seven studies, published between 1989 to 2005, dealing with the efficacy of CBT and EMDR. Researchers concluded that both EMDR and CBT are equally effective in the treatment of PTSD. However, more research should be conducted to see what population will benefit most from each therapy (Seidler & Wagner, 2006).
Individual studies supporting equal efficacy. A controlled study on 74 adult female rape victims found that prolonged exposure therapy and EMDR were both efficacious in the treatment of PTSD. The participants were randomly assigned to receive EMDR, prolonged exposure, or be on the waitlist (control). Each group received nine 90-minute sessions, twice a week. The groups differ slightly at baseline. The EMDR group had higher overall PTSD symptoms, depressive symptoms, and anxiety. However, this was not statistically significant. Post-treatment, both the EMDR and PE groups had significantly fewer participants with a diagnosis of PTSD compared to the control group. A diagnosis of PTSD was determined using the Clinician-Administered PTSD Scale. Five percent of PE subjects, 25% of EMDR subjects, and 90% of control subjects had a diagnosis of PTSD post-treatment. At the 6-month follow up, 5.6% of PE subjects and 26.3% of EMDR subjects had a diagnosis of PTSD. Although the number of participants that met the criteria for PTSD differed between PE and EMDR post-treatment and at the 6-month follow up, there was no statistically significant difference between the two therapies. In addition, there was no statistically significant difference in PTSD symptom cluster improvements.

This study also assessed good overall functioning post-treatment, which was defined as having a 50% or more decrease in the CAPS score, a score of 10 or less on the Beck Depression Inventory, and a score of 40 or less on the State-Trait Anxiety Inventory. Based on this definition, 70% of PE subjects, 50% of EMDR subjects, and none of the participants in the control group met this criterion. There was no statically significant difference between PE and EMDR. At the 6-month follow up, 78% of PE subjects and 35.3% of EMDR subjects had good overall functioning post-treatment. There was a statistically significant difference between PE and EMDR in this case with PE resulting in more participants with good overall functioning six
months after treatment (Rothbaum, Astin, & Marsteller, 2005). This study was well designed and contributed greatly to the present knowledge of CBT and EMDR.

*Studies showing EMDR to be more effective.* Lee et al. compared prolonged exposure therapy to EMDR and found that both produced positive results post-treatment among the general population. Traumatic events included physical abuse, emotional neglect, and sexual abuse. After treatment, 83% of EMDR subjects and 75% of PE subjects no longer had a diagnosis of PTSD based on the Davidson’s Structured Interview for PTSD. At the 3-month follow up, 83% from each therapy no longer had PTSD. This study considered clinically significant improvement as a score less than 37 on the Impact of Event Scale. Based on this criterion, 66.7% of subjects had improvement after treatments. At the 3-month follow up, 91.7% of EMDR subjects and 50% of PE subjects had clinically significant improvement. There was a statically significant difference between the two treatments with EMDR being more effective. Overall, both EMDR and PE were effective in the treatment of PTSD compared to those in the wait-list group. However, this study favored EMDR slightly (Lee, Gavriel, Drummond, Richards, & Greenwald, 2002).

Consistent with Lee et al. (2002), another study found that both prolonged exposure and EMDR are effective in the treatment of PTSD and depressive symptoms among the general population who experienced trauma. EMDR subjects had a quicker response to treatment, a lower dropout rate, and a lower score on the Subjective Units of Distress (SUDS). The SUDS measures patient’s feelings of discomfort during the treatment session. The study defined a “cure” as a 70% reduction in the severity of PTSD symptoms measured by PTSD Symptom Scale – Self-Report Version (PSS-SR). Based on this definition, EMDR subjects had a more significant improvement of PTSD symptoms after three active treatment sessions than those in
the PE group. The PE subjects reported that the stress associated with discussing the trauma and
the homework that was assigned was overwhelming. Based on the SUDS scores, EMDR
subjects had significantly lower scores after the first session compared to PE subjects, suggesting
that EMDR subjects improved at a quicker pace than PE subjects. The EMDR treatment may be
less distressing due to the breaks in between recalling the distressing memory. Also, the faster
progress with EMDR may explain the lower dropout rate for this therapy compared to PE.
Although there were differences between the rates of response to treatment, dropout rate, and
SUDS scores, both therapies are effective in the treatment of PTSD. In addition, treatment gains
from both therapies were maintained at the 3-month follow up. (Ironson, Freund, Strauss, &
Williams, 2002).

A randomized-controlled study compared EMDR, exposure plus cognitive restructuring,
and waiting list treatments. The results revealed that EMDR and exposure plus cognitive
restructuring were effective treatments in regards to the Impact of Events Scale (IES), SI-PTSD
Scale, Hospital Anxiety and Depression Scale (HADS), Sheehan Disability Scale, Montgomery
Asberg Depression Rating Scale (MADRS), Hamilton Rating Scale for Anxiety (HAM-A)
scores. These are measures that are used to assess PTSD symptoms, depression, anxiety, and
social functioning. The only difference between these two treatments at post-treatment was
EMDR was more effective for depressive symptoms and social functioning. EMDR had an 81%
reduction of depressive symptoms on the HADS Depression scale and a 78% reduction on the
MADRS as opposed to exposure plus cognitive restructuring with a 43% reduction on the HADS
Depression scale and a 52% on the MADRS. In addition, 70% of EMDR participants had
improved social functioning compared to 38% of exposure plus cognitive restructuring
participants. These benefits were achieved quicker with EMDR with the average number of
sessions being 4.2 as opposed to 6.4 for exposure plus cognitive restructuring. The only difference between EMDR and exposure plus cognitive restructuring at the 15-month follow up was 73% of EMDR participants and 35% of exposure plus cognitive restructuring participants did not have depressive symptoms based on the MARDS (Power, 2002).

Studies showing CBT to be more effective. Trauma Treatment Protocol (TTP), a form of CBT, have been found to be statistically and clinically more effective than the use of EMDR for the treatment of PTSD. Significant improvement from treatment was defined as a score that is more than two standard deviations below the mean of the pretreatment sample value. Based on various measuring tools such as structured interviews and self-reported questionnaires used to assess PTSD symptoms, TTP was found to significantly improve all the PTSD measures compared to EMDR. Approximately 83% of TTP subjects and 36% of the EMDR subjects did not have a diagnosis of PTSD post-treatment based on the PTSD-I, a diagnostic interview based on the DSM-III-R. This difference was statistically significant and favored TTP. Based on the PSS-SR, a self-report questionnaire, 58.33% of TTP subjects and 27.27% of EMDR subjects did not have a diagnosis of PTSD post-treatment; these differences were not statistically different. This study examined the effect each treatment had over time. Finally, the TTP treatment displayed superior results from pre- to post-treatment and post-treatment to the 3-month follow up (Devilly & Spence, 1999). A more recent study compared the efficacy and speed of exposure therapy, EMDR, and relaxation therapy in those who have chronic PTSD. Treatment involved eight 90-min sessions. All three treatments were found to reduce symptoms of PTSD and there was a significantly lower score for guilt, anger, and depression from baseline to the 3-month follow up based on self-report questionnaires. At post-treatment and 3-month follow up, exposure therapy was found to have the largest number of participants that did not meet criteria
for PTSD based on the DSM-IV-R. Approximately 80% of exposure therapy participants did not have a diagnosis of PTSD at post-treatment and 3-month follow up. In addition, exposure therapy was most efficacious in treating symptoms of reexperiencing and avoidance. Clinically significant change was defined as a score that was lower than two standard deviations on the Clinician-Administered PTSD Scale. Exposure therapy worked more quickly on avoidance symptoms than EMDR and relaxation training (Taylor et al., 2003). Overall, this study found that exposure therapy, EMDR, and relaxation therapies are effective in treating PTSD. However, exposure therapy was most effective.

**Recommendations for non-pharmacologic interventions for returning veterans.**

EMDR and cognitive-behavioral therapy are evidence-based treatments for PTSD and should be considered as first-line psychotherapy for veterans. Some studies may argue that EMDR is more beneficial while others may say that CBT is more beneficial. The current VA and Department of Defense Practice Guidelines strongly recommend that those who are diagnosed with PTSD receive an exposure-based therapy, a cognitive-based therapy, stress management therapy, and/or EMDR. The treatment should be based on the clinician’s assessment of the patient as well as the patient’s choice of treatment (VA, 2010). It may be beneficial to conduct studies on OEF/OIF veterans in order to see which treatment is more effective for this specific population.

**Pharmacotherapy**

**Selective serotonin reuptake inhibitors.** Recent clinical reviews are in agreement that the first choice of drugs used to treat PTSD is selective serotonin reuptake inhibitors (SSRIs), a type of antidepressants (Bobo, Warner, & Warner, 2007; Khouzam & Donnelly, 2001; Mosier, Schymanski, Pickett, & Mosier, 2002; Reeves, 2007). The SSRIs act by inhibiting the reuptake of serotonin by the pre-synaptic neuron. This leaves more serotonin in the synaptic cleft. It is
unknown why this class of drugs is effective for anxiety disorders such as PTSD (K. Lee). A study conducted at the U.S. Department of Veterans Affairs found that 89% of veterans with PTSD were prescribed an antidepressant. Within this group, 85% were prescribed a SSRI (Mohamed & Rosenheck, 2008). This class of drugs is commonly used due to its ability to treat various symptoms that are associated with PTSD. Also, it has few side effects, which is an advantage when dealing with patient compliance. It is important that patients understand the positive effect of SSRIs may not be evident until 4-6 weeks after onset of treatment (Bronson, Franco, & Budur, 2007). Two SSRIs are FDA approved for treatment of PTSD, paroxetine and sertraline (Ramaswamy, et al., 2005). Although other SSRIs may be prescribed for those with PTSD, sertraline and paroxetine have been most studied and has been shown to be effective.

Sertraline (Zoloft ®). Sertraline has been shown to be effective in reducing symptoms of PTSD among the general population. Two 12-week, randomized, placebo-controlled studies have been conducted on civilians with PTSD in order to test the effectiveness of sertraline (Brady et al., 2000; Davidson, Rothbaum, van der Kolk, Sikes, & Farfel, 2001). The results were similar in that sertraline was effective in the treatment of PTSD. The first study found that positive effects of sertraline were seen after two weeks of treatment compared to the placebo. In addition, a 70% decrease of PTSD symptoms, measured by Clinician Administered PTSD Scale, Part 2 (CAPS-2), and the Impact of Event Scale, was seen after four weeks of treatment with sertraline. At the end of the 12-week treatment period, 53% of those who were treated with sertraline responded positively to the treatment. Sertraline was well tolerated with insomnia being the only adverse effect noted (Brady et al., 2000). These findings were similar to the other 12-week study that was conducted to test the effectiveness of sertraline (Davidson et al., 2001).
Another study extended the previous two 12-week, double-blinded, placebo-controlled trials to an additional a 24-week treatment of sertraline. This study examined the long-term effectiveness of sertraline among those who participated and completed one of the two 12-week studies. Results revealed that 92% of those who responded to sertraline in the 12-week period continued to have positive results. Also, 54% of those who did not respond to sertraline in the 12-week studies responded positively to sertraline in this continuation trial. Of this group, 49% noticed positive effects within 6 weeks of the continuation trial. In summary, 74% of participants responded positively to sertraline at the end of the 24-week study (Londborg et al., 2001) as opposed to 53-60% at the end of the two 12-week studies (Brady et al., 2000; Davidson et al., 2001).

Another study further extended these studies by using those who completed the 24-week continuation study as their subjects in order to test the ability of sertraline to prevent relapse of PTSD. Sertraline was very effective in preventing relapse of PTSD, discontinuation due to clinical deterioration, and acute exacerbation of symptoms. Those who were treated with the placebo were 4.48 to 6.35 times more likely to have relapse issues. In addition, those who were treated with sertraline had more improvement in their quality of life (Davidson et al., 2001).

It is important to note that these studies were conducted on the general population diagnosed with moderate to severe PTSD, with the majority of the subjects being female. More studies should be conducted on males, as well as those who are suffering from combat-related PTSD. Interestingly, one randomized, double-blind, placebo-controlled trial that was conducted in the Veterans Affairs setting found no positive results with sertraline for the treatment of PTSD (Friedman, Marmar, Baker, Sikes, & Farfel, 2007). A possible explanation why sertraline has been found to be efficacious among civilians and not veterans is the difference in the severity of
PTSD. The 24-week continuation treatment study on sertraline found that the only factor that predicted a longer time until positive response to sertraline was having a higher score on the CAPS-2, indicating severe PTSD (Londborg et al., 2001). This may be a reason why sertraline was not effective in veterans during the 12 weeks of treatment (Friedman et al., 2007), because veterans may need more time in order to respond to sertraline.

However, a recent, 10-week, randomized, double-blind, placebo-controlled study on Iranian veterans who participated in the Iran-Iraq war found that sertraline was effective in the treatment of PTSD after 10 weeks. Consistent with other studies, sertraline was well-tolerated and no adverse effects were statistically significant (Panahi et al., 2011). Inconsistent findings of sertraline may be due to many factors such as war-related experiences, different war eras, and varying statistical methods used in each study.

**Paroxetine (Paxil®).** A 12-week, randomized, placebo-controlled study on the efficacy and safety of paroxetine for treatment of chronic PTSD among the general population compared different doses of paroxetine, 20mg/day and 40 mg/day, with a placebo pill. It found that 20 and 40mg/day of paroxetine were effective in reducing symptoms of PTSD, measured by CAPS-2, compared to the placebo group. In addition, paroxetine was more effective than the placebo in the treatment of PTSD in those suffering from comorbid major depressive disorder; these patients displayed improved social and occupational functioning such as work, social life, and family life, which was measured by the Sheehan Disability Scale. Paroxetine was well tolerated with few adverse effects (Marshall, Beebe, Oldham, & Zaninelli, 2001) and has been found to be safe for long term use based on a recent, 52-week, non-comparative open-label study (Kim, et al., 2008). Another 12-week, randomized, placebo-controlled study had results consistent with these findings. In addition, improvement of hyperarousal symptoms was seen after four weeks
and improvement of avoidance/numbing symptoms were seen after eight weeks. The positive response was achieved by 60% of patients after the twelve-week study. Paroxetine was also found to reduce symptoms of depression (Tucker et al., 2001).

**The Use of Combined Pharmacologic and Non-pharmacologic Therapies**

There have been implications that the concurrent use of CBT and pharmacotherapy may improve the treatment outcome of PTSD (Choi et al., 2010; Cukor, Olden, Lee, & Difede, 2010; Davis, Barad, Otto, & Southwick, 2006). However, there have not been many studies that have tested the combined use of CBT and pharmacotherapy. One recent study found that those who had a partial response to sertraline had more response after the augmentation with prolonged exposure therapy (Rothbaum et al., 2006). Therefore, the use of psychotherapy and pharmacotherapy may be useful for certain patients. According to the guidelines by the Department of Veterans Affairs (VA) and the Department of Defense (DoD), cognitive behavioral therapy and/or SSRIs are recommended as first-line treatment options (VA, 2010). The treatment plans will differ between patients due to the complexity of PTSD. Clinicians should thoroughly assess patients in order to provide an optimal treatment plan specific to them.

**EMDR versus SSRIs.** A recent randomized-controlled clinical trial consisting of 88 PTSD patients tested the efficacy of EMDR and fluoxetine, an SSRI. The participants were treated for eight weeks and assessed pre-treatment, post-treatment, and at the 6-month follow up. Findings revealed that EMDR, fluoxetine, and the placebo pill were all effective in the treatment of PTSD symptoms. EMDR was more effective in maintaining treatment gains, such as a reduction of PTSD symptoms, compared to those treated with fluoxetine or the placebo pill. At the 6-month follow up, those in the EMDR group continue to improve while those in the fluoxetine group did not maintain any of the treatment gains. Fifty-seven percent of EMDR
completers did not have symptoms at the 6-month follow up whereas those in the fluoxetine group were symptomatic. Interestingly, the age of trauma onset had an effect on treatment outcome for those in the EMDR group. Those who had an adult-onset trauma, defined as trauma occurring older than 18 years of age, had a more positive response to EMDR than those who experienced a child-onset trauma, defined as trauma occurring younger than 18 years of age. None of the adult-onset participants had a diagnosis of PTSD post-treatment while 25% of child-onset participants still had a PTSD diagnosis. At the 6-month follow up, 25% of adult-onset participants and 66.7% of child-onset participants had symptoms (van der Kolk et al., 2007). This may imply that those who are dealing with a longstanding traumatic event may be less likely to obtain full benefit from EMDR. It may be beneficial for OEF/OIF veterans who are suffering from PSTD after deployment receive treatment as soon as possible in order to increase the chances of a good prognosis.
Discussion

The brave men and women of the United States military are risking their lives so that Americans can live in a free and safe country. The battles and obstacles do not end for veterans when they return from deployment. PTSD is the battle after deployment that many veterans face that affects physical, social, psychological, and behavioral functioning. The countless dimensions of PTSD have an effect on not only veterans, but also society.

Clinical Presentations

This clinical review discussed possible clinical presentations of OEF/OIF veterans who may be affected by PTSD. Veterans with PTSD may present with various complaints. Due to many factors that may hinder a diagnosis of PTSD, it is crucial to elicit a full history and perform a thorough physical examination. The history and physical examination could allude to a diagnosis of PTSD. There are many atypical presentations of PTSD such as sleep disruption, headaches, and alcohol misuse.

Several items in the DSM-IVR criteria for PTSD directly involve sleep disruption. Therefore, it is not unusual for veterans to present with insomnia or nightmares as their initial complaint. OEF/OIF veterans are more likely to suffer from insomnia than veterans serving elsewhere (Gellis et al., 2010; McLay et al., 2010). Risk factors for insomnia include PTSD, depression, and mild traumatic brain injury with neurocognitive deficits (Gellis et al., 2010; Leskin et al., 2002). Veterans with PTSD may recall the distressing memory at night when they have time to think about the event. Instead of winding down, they are in a hyperarousal state, leading to problems falling asleep. When they do fall asleep, the increased level of anxiety causes them to have frequent awakenings. This leads to poor quality of sleep, daytime sleepiness, and decline in overall health. Sleep disruption leads to physical and cognitive
problems such as fatigue and difficulty concentrating, emotional issues such as anger and hostility, and social and interpersonal problems with employment and relationships.

Veterans suffering from PTSD are likely to suffer from headaches. PTSD is the considered the main predictor of headaches (Afari et al., 2009). OEF/OIF veterans with chronic widespread pain are more likely to have PTSD (Helmer et al., 2009). Pain affects physical, psychological, and behavioral functioning. Those who suffer from pain may not be able to concentrate at work, feel frustrated and angry, or feel isolated from loved ones. This may lead them to resort to alcohol in order to relieve the distress.

Alcohol misuse and PTSD frequently overlap. Those who have PTSD are also likely to have a diagnosis alcohol use disorder and/or drug use disorder (Seal et al., 2011). It has been suggested that those with PTSD use alcohol in order to alleviate the negative effects associated with PTSD (Cucciare et al., 2010). The symptoms of PTSD may become overwhelming and alcohol may seem to help temporarily. It may also help them deal with insomnia, nightmares, social situations, feelings of isolation, anger, guilt, or relationship issues. Although it may seem to help, it is only hurting the veteran as well as their loved ones. Alcohol use has been shown to affect work performance (Adler et al., 2011) and intimate relationships (Savarese et al., 2001). It could also worsen PTSD symptoms leading to a poorer prognosis.

PTSD is a complex disorder that is the foundation for the vicious cycle that many veterans encounter. Those with PTSD suffer from symptoms such as headaches, insomnia, and nightmares. Their symptoms affect their readjustment period post-deployment, which involves relationships and employment. Frustration with their role in the family and in the civilian world may lead to worsening symptoms. They may then resort to alcohol in order to relieve their symptoms. Alcohol misuse and PTSD symptoms affect overall work performance and
relationships, which then disrupts all the components in the vicious cycle. In order to break this vicious cycle, treatment should be initiated as soon as possible.

**Treatments for PTSD**

Every veteran should be provided with a specific treatment plan targeting his or her symptoms and concerns. A form of cognitive behavioral therapy involving an exposure component or EMDR should be the first line psychotherapy and a selective serotonin reuptake inhibitor, either paroxetine or sertraline, should be the first line pharmacotherapy. The studies discussed in this clinical review reveal the efficacy of cognitive behavioral therapy, exposure therapy, EMDR, and selective serotonin reuptake inhibitors in the treatment of PTSD. This may be adjusted based on patient and clinician.

Prolonged exposure therapy was found to be effective in the treatment of PTSD and depression among veterans including OEF/OIF veterans (Schnurr et al., 2007; Tuerk et al., 2011). A more multidisciplinary therapy called Trauma Management Therapy, which encompasses an exposure component as well as a social and emotional rehabilitation component, have been found to be effective among veterans (Beidel et al., 2011). A newer form of exposure therapy called virtual reality exposure therapy show promising results. This new therapy has shown a decrease in PTSD symptoms, depression, and anxiety (Rizzo et al., 2009; A. S. Rizzo, et al., 2010). Since this is a newer, technological therapy, the availability may be limited. Based on the research studies conducted on exposure therapy, it is safe and effective and has shown positive results among those suffering from PTSD. In addition to the therapies mentioned above, EMDR has been shown to be equally efficacious in the treatment of PTSD. Using one these therapies for the initial treatment for veterans with PTSD is appropriate. However, exposure therapy has been tested in the OEF/OIF veteran population and shown to be effective.
Therefore, psychotherapy involving an exposure component would be recommended in the treatment of PTSD. More studies should be conducted on the effectiveness of Trauma Management Therapy and EMDR in the OEF/OIF veteran population.
Conclusion

The treatment plan for patients with PTSD depends on the PA’s assessment of the severity of PTSD, the presence of comorbid physical and psychiatric symptoms, and patient’s attitudes towards treatment. For those who are diagnosed with sub-clinical PTSD or a mild form of PTSD, it is appropriate to begin with a psychotherapy that has an exposure component such as prolonged exposure therapy, EMDR, or Trauma Management Therapy. PAs can refer the veteran to a psychologist or psychiatrist. By beginning with psychotherapy, the clinician can see if the veteran is improving without the interference of other factors such as medications. However, if the veteran’s status is unchanged or worsened, it may be appropriate to add a selective serotonin reuptake inhibitor such as sertraline or paroxetine. Medication may enhance the therapeutic benefits of the psychotherapy by allowing the veteran to fully participate in the therapy without distractions such as daytime sleepiness from insomnia. For those with a moderate to severe case of PTSD, the use of psychotherapy and either sertraline or paroxetine is also indicated. The PA could begin the pharmacologic portion of the treatment by prescribing either sertraline or paroxetine, before the veteran begins the non-pharmacologic portion of the treatment with the psychiatrist. This will give the SSRI time to work.

In addition, it is appropriate for PAs to treat specific symptoms that may be distressing to the veteran while receiving psychotherapy. This will then help the veteran to focus on the psychotherapy and benefit from its positive effects. As discussed, PTSD can come in many forms and is associated with many different problems such as sleep disruption, headaches, and alcohol-related issues. In addition to psychotherapy and/or SSRIs, PAs should provide education about good sleep hygiene for those suffering from sleep disruption. Good sleep hygiene involves avoiding caffeine, going to sleep at the same time every night, getting up at the same time every
morning, taking a warm bath before bedtime, or exercise. PAs can suggest over-the-counter headache medications such as acetaminophen or ibuprofen for those presenting with symptoms of headaches. In addition, PAs can provide stress-relieving techniques to help with pain such as tension headaches. Patients who have issues with alcohol misuse may benefit from support groups (VA, 2010). PAs should provide the patient with information about Alcoholics Anonymous (AA).

John is suffering from insomnia, headaches, and alcohol misuse. He is diagnosed with PTSD. The PA formulates a proper treatment plan and provides John with reading material about PTSD and support groups. Based on data and evidence, Trauma Management Therapy should be the first line treatment option. John stated that he felt socially isolated and has been feeling down lately. Since the Trauma Management Therapy is exposure therapy with a social and emotional component, this would be beneficial for John. The PA then refers him to a psychiatrist. The addition of sertraline or paroxetine may assist in the treatment progress. The PA starts John on sertraline in the meantime until he sees the psychiatrist. Also, the PA educates John about good sleep hygiene for his insomnia, use of ibuprofen or acetaminophen for headaches, and referral for a support group for alcohol misuse. This is an example of how a treatment plan is formulated for veterans with PTSD by a PA.
References


with and without chronic posttraumatic stress disorder. *Addictive Behaviors, 29*(8), 1579-1593.


Table 1: Diagnostic Criteria for Posttraumatic Stress Disorder (In adults)

<table>
<thead>
<tr>
<th>A.</th>
<th>The person has been exposed to a traumatic event in which both of the following have been present:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1) The person experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others</td>
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<td></td>
<td>(2) The person's response involved intense fear, helplessness, or horror. Note: In children, this may be expressed instead by disorganized or agitated behavior.</td>
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<tr>
<th>B.</th>
<th>The traumatic event is persistently re-experienced in at least one of the following ways:</th>
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<tbody>
<tr>
<td></td>
<td>(1) Recurrent and intrusive distressing recollections of the event, including images, thoughts, or perceptions. Note: In young children, repetitive play may occur in which themes or aspects of the trauma are expressed.</td>
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<td></td>
<td>(2) Recurrent distressing dreams of the event. Note: In children, there may be frightening dreams without recognizable content.</td>
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<tr>
<td></td>
<td>(3) Acting or feeling as if the traumatic event were recurring (includes a sense of reliving the experience, illusions, hallucinations, and dissociative flashback episodes, including those that occur upon awakening or when intoxicated). Note: In young children, trauma-specific reenactment may occur.</td>
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<tr>
<td></td>
<td>(4) Intense psychological distress at exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event.</td>
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<tr>
<td></td>
<td>(5) Physiological reactivity on exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event.</td>
</tr>
</tbody>
</table>

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<tr>
<th>C.</th>
<th>Persistent avoidance of stimuli associated with the trauma and numbing of general responsiveness (not present before the trauma), as indicated by at least three of the following:</th>
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<tbody>
<tr>
<td></td>
<td>(1) Efforts to avoid thoughts, feelings, or conversations associated with the trauma</td>
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<tr>
<td></td>
<td>(2) Efforts to avoid activities, places, or people that arouse recollections of the trauma</td>
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<tr>
<td></td>
<td>(3) Inability to recall an important aspect of the trauma</td>
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<tr>
<td></td>
<td>(4) Markedly diminished interest or participation in significant activities</td>
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<td></td>
<td>(5) Feeling of detachment or estrangement from others</td>
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<td></td>
<td>(6) Restricted range of affect (e.g., unable to have loving feelings)</td>
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<tr>
<td></td>
<td>(7) Sense of a foreshortened future (e.g., does not expect to have a career, marriage, children, or a normal life span)</td>
</tr>
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<tr>
<th>D.</th>
<th>Persistent symptoms of increased arousal (not present before the trauma), as indicated by two (or more) of the following:</th>
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<tbody>
<tr>
<td></td>
<td>(1) Difficulty falling or staying asleep</td>
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<td></td>
<td>(2) Irritability or outbursts of anger</td>
</tr>
<tr>
<td></td>
<td>(3) Difficulty concentrating</td>
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<tr>
<td></td>
<td>(4) Hypervigilance</td>
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<tr>
<td></td>
<td>(5) Exaggerated startle response</td>
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</tbody>
</table>

| E. | Duration of the disturbance (symptoms in Criteria B, C, and D) is more than one month. |
F. The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.

*Specify if:*

**Acute:** if duration of symptoms is less than 3 months

**Chronic:** if duration of symptoms is 3 months or more

*Specify if:*

**With or Without Delayed Onset:** if onset of symptoms is at least 6 months after the stressor


Table 2: Assessment Tools Used in Clinical Studies

<table>
<thead>
<tr>
<th>Instruments</th>
<th>Variables</th>
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</thead>
<tbody>
<tr>
<td>Alcohol Use Disorders Identification Test-Consumption Items (AUDIT-C)</td>
<td>PTSD</td>
</tr>
<tr>
<td>Beck Depression Inventory-II</td>
<td>Depression</td>
</tr>
<tr>
<td>Clinician-Administered PTSD scale (CAPS)</td>
<td>Alcohol Use</td>
</tr>
<tr>
<td>Davidson Trauma Scale</td>
<td>Anxiety</td>
</tr>
<tr>
<td>Davidson’s Structured Interview for PTSD</td>
<td>Other</td>
</tr>
<tr>
<td>Global Assessment of Functioning</td>
<td>Overall functioning</td>
</tr>
<tr>
<td>Hamilton Rating Scale for Anxiety (HAM-A)</td>
<td></td>
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<tr>
<td>Hospital Anxiety and Depression Scale (HADS)</td>
<td>X</td>
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<tr>
<td>Impact of Event Scale</td>
<td></td>
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<tr>
<td>Mississippi Scale for Combat Related PTSD</td>
<td>X</td>
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<tr>
<td>Montgomery Asberg Depression Rating Scale (MADRS)</td>
<td></td>
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<tr>
<td>Patient Health Questionnaire-9</td>
<td></td>
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<tr>
<td>PTSD Checklist, civilian version</td>
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<tr>
<td>PTSD Checklist, military version</td>
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<tr>
<td>PTSD Symptoms Scale</td>
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<tr>
<td>PTSD-I</td>
<td></td>
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<tr>
<td>Measurement</td>
<td>Social Functioning</td>
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<tr>
<td>Sheehan Disability Scale</td>
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<tr>
<td>SI-PTSD Symptom Checklist</td>
<td>X</td>
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<tr>
<td>Spielberger State-Trait Anxiety Inventory</td>
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<tr>
<td>Subjective Unit of Disturbance (SUD)</td>
<td>Distress</td>
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<tr>
<td>Symptom Checklist-90 hostility subscale</td>
<td>Anger/Hostility</td>
</tr>
</tbody>
</table>
Abstract

Objective: Posttraumatic stress disorder (PTSD) is a syndrome precipitated by exposure to traumatic events causing intense fear and helplessness. This clinical review focused on clinical presentations and evidence-based treatments for PTSD among recent U.S. veterans.


Results: PTSD is prevalent among recent U.S. veterans. Clinical presentations of PTSD include sleep problems, pain, anxiety, depression, and alcohol misuse. The major evidenced-based psychotherapies are exposure therapy and EMDR; while the SSRIs (sertraline, paroxetine) are first-line pharmacotherapy.

Conclusion: The high prevalence of PTSD among recent veterans has a negative effect on readjustment post-deployment. Accurate diagnosis is critical to recommend treatment options to veterans with PTSD. More research should be conducted in returning veterans to increase awareness of clinical presentations and refine treatments.