

Psychiatric Disorders Following Return from Combat Duty During the Twenty-First Century

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ABSTRACT

Knowledge of the psychiatric consequences of combat deployment expanded rapidly during the late 20th century as large numbers of Vietnam veterans experienced substantial difficulties with readjustment upon return from deployment. Current warfare in Afghanistan and Iraq has resulted in the longest period of sustained combat exposure for United States forces since Vietnam. This article compares the nature of conflict, composition of deployed forces, combat exposures, and injuries in these deployment settings compared to late 20th century conflicts. It also reviews early findings on rates of psychiatric disorders among returning troops and compares these findings with those of studies of troops returning from prior conflicts. Evaluation and treatment approaches to posttraumatic stress disorder in combat veterans are then provided. Preliminary findings suggest that early assessment of veterans may not represent the long-term psychiatric needs of returning veterans and that ongoing surveillance and availability of psychiatric care will be needed for this population.

INTRODUCTION

Psychiatrists and other physicians have long recognized that the trauma of war results in psychologic changes in those who return; yet, the field of psychiatry struggled for decades to develop a clear description of the etiology, symptoms, and course of post-war psy-

Needs Assessment: The current protracted warfare in Afghanistan and Iraq is exposing hundreds of thousands of American men and women to psychologic and physical trauma. These exposures may be severe and repetitive. Early studies of returning troops show patterns of illness onset and course of illness that differ from those seen in earlier wars. Awareness of the nature of post-deployment psychiatric problems and the nature of current effective treatment will assist clinicians in their assessment and treatment of post-deployment psychiatric disorders.

Learning Objectives:

- Describe the differences in modern warfare and how changes in deployment and deployment exposures may alter risk for post-deployment psychiatric problems.
- Examine the rates of psychiatric illness in prior wars compared to the rates seen following recent deployments.
- Identify components of assessment of posttraumatic stress disorder (PTSD).
- Identify the primary pharmacologic and psychotherapeutic treatment modalities for PTSD.

Target Audience: Primary care physicians and psychiatrists.

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chiatric disorders. As recently as 1968, during the height of the war in Vietnam, the *Diagnostic and Statistical Manual of Mental Disorders*, Second Edition (*DSM-II*),¹ subsumed war reactions under the category of transient situational disturbances.² The concept of post-combat symptoms as a transient response to exposure led psychiatrists to focus on principles of restoration of function with the belief that symptoms would resolve without lasting morbidity.³ Medical and public policy interest in the long-term effects of combat on returning soldiers became heightened during the 1970s. It became apparent to clinicians that large numbers of soldiers returning from Vietnam were experiencing protracted difficulties with readjustment into civilian society. During this period, clinicians and researchers began to develop criteria to describe the psychiatric symptoms that later came to define posttraumatic stress disorder (PTSD), first recognized in the *DSM-III*.⁴

Early epidemiologic studies of PTSD included primarily civilians, but also a small percentage of Vietnam veterans. These studies found a 4% lifetime rate of PTSD in non-wounded veterans and 20% lifetime prevalence of PTSD in

among soldiers who had been seriously injured (ie, received a Purple Heart), with up to one-third reporting symptoms consistent with PTSD at the time of the interview.

These earlier studies could not accurately address the onset and early course of psychiatric illness in combat veterans because they were conducted many years after the combat exposure and were subject to inaccuracies in recollection. Other studies have shown that recall of specific combat exposures changes over time, and that reporting an increased number of exposures during later evaluations is correlated with worsening health perception.⁷ Since symptoms of PTSD and reported exposures associated with those symptoms both change over time, there is reason to question the accuracy of reported exposure severity and its association with subsequent symptom severity when there has been an extended passage of time from the original traumatic event.⁸

Studies following Operation Desert Shield/Desert Storm (DS/DS) found that among the 15,000 troops surveyed upon return from combat deployment, 12.1% met criteria for PTSD. Among those with high levels of combat-related

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veterans wounded in combat.⁵ The most extensive study of veterans, the National Vietnam Veterans Readjustment Study (NVVRS), interviewed veterans using sophisticated sampling techniques and adjusted for demographic factors.⁶ The study found that 15.2% of male veterans who had been deployed to the combat theater had active PTSD at the time of interview, and that 11.1% had symptoms consistent with partial PTSD at the time of interview. Male theater veterans had a 30.9% lifetime prevalence of PTSD and a 22.5% lifetime prevalence of partial PTSD. Thus, >50% of theater veterans had experienced significant traumatic stress-related symptoms at some point following return from war. The NVVRS also found a 50% lifetime rate of alcohol abuse and a 10% lifetime prevalence of depression among those who experienced intense combat. Among male veterans with PTSD, there was an 80% lifetime prevalence of alcohol abuse and a 30% lifetime prevalence of depression. Since the study was epidemiologic in design, it did not address the causal association between the disorders, but did demonstrate high rates of comorbidity. Of note, the NVVRS found substantially higher rates of PTSD

exposures, 22.6% met criteria for PTSD.⁹ This study was conducted approximately 4 years following return from deployment, so recall of exposures may have been subject to bias. The study was also limited in that it used a well-validated checklist, but did not include a clinical interview. Operation DS/DS was also unique in that it was a short-lived conflict with very few casualties among United States forces. The majority of US casualties resulted from non-combat injuries, such as motor vehicle accidents. Deployed troops returned to a hero’s welcome. Other late 20th century conflicts were also either short in duration (Somalia) or low intensity with regard to danger to US forces (Bosnia, Croatia, Kosovo).

The current major active US conflicts, Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF), differ significantly in many respects from the wars of the late 1900s. The nature of combat, the characteristics of the service members deployed, the characteristics of traumatic exposure during deployment, the nature of injuries sustained, and the survival rate from injuries have all changed. Early studies of returning deployed combat and support troops provide some

insight into the early onset and course of psychiatric illness. As with most early studies of newly identified populations at risk, these studies also identify questions regarding the longer term prognosis, need for surveillance, barriers to access and utilization of mental health resources during and after deployment, and optimal approaches to treatment.

NATURE OF CONFLICT

The conflicts in OEF and OIF have each evolved over time. Early in conflict, the advancement of US forces was swift, successful, and resulted in relatively few US deaths compared to those of opposition forces. Many believed these conflicts would end shortly after the initial invasions. The formerly oppressed citizens of Afghanistan and Iraq initially greeted US forces as liberators. The general tone of the US public at large was optimistic and supportive of the military efforts. In the months that have ensued there has been a rising level and sophistication of insurgent activity, increasing distrust of the US presence in those countries, a continuously rising US death toll, and declining popular support of the campaigns within the US and abroad.

NATURE OF DEPLOYED FORCES

Unlike Vietnam, OEF and OIF troops represent an all-volunteer force (regular active and reserves), and many have been seasoned by prior operations in DS/DS, Somalia, Bosnia, Kosovo, and Haiti. In OIF and OEF, the use of reserve forces has been more extensive than in earlier 20th century campaigns, and longer and repeated deployments have disrupted the day-to-day lives of these "citizen soldiers" and their families. Stresses include loss of income and extended family separation. It is unclear how these changes in level of prior combat experience as well as changes in deployment cycle frequency and duration will affect resilience or vulnerability to post-deployment problems.

NATURE OF EXPOSURES

Longer and more frequent deployments increase the risk of exposure to traumatic events. The nature and range of the potential traumatic events are also more diverse. Potential risk in past conflicts was generally from predictable sources, such as small arms fire or rocket-propelled grenades. The extensive use of improvised explosive devices, mortar fire, car bombs, and suicide bombers during OEF and OIF has created an

environment where living quarters, dining facilities, and routine day-to-day travel are all subject to attack. The effect of constant vigilance and arousal in such an environment on post-deployment psychiatric illness is unclear.

NATURE OF INJURIES

Improvements in body armor have drastically reduced the number of life-threatening chest and abdominal injuries.¹⁰ Advancements in treatment have also reduced the number of deaths among injured soldiers who reach medical care.¹¹ Consequently, many seriously injured soldiers (who would have died in previous conflicts) now survive. Examining the rate of post-deployment psychiatric illness in injured soldiers compared to that of non-injured combat troops is an area for investigation, since physical injury is a known risk factor for PTSD and depression.

ACUTE RATES OF PROBABLE PTSD AND DEPRESSION IN NON-INJURED COMBAT SOLDIERS

Hoge and colleagues¹² examined >3,000 combat troops returning from OEF and OIF. These troops reported high levels of combat exposure. More than 80% of the survey population returning from Iraq reported having received incoming small arms and rocket or mortar fire. Using broad and strict definitions of PTSD and depression (the strict measures requiring high levels of distress in addition to the presence of symptoms), 12.2% to 19.9% of troops returning from Iraq met criteria for PTSD, and 7.1% to 15.2% met criteria for depression approximately 4 months after return from deployment. In troops returning from Afghanistan (where combat was generally less intense), 6.2% to 11.5% met criteria for PTSD and between 6.9% and 14.2% met criteria for depression. Between 24% and 35% of these returning troops also endorsed one or more alcohol misuse-related behaviors or symptoms. The most concerning finding in the Hoge study was that the majority of those who met criteria for illness and who acknowledged that their symptoms were causing problems had not sought care. Cited reasons for not seeking care often centered on the perception that doing so would damage one's career, or fear that others would think less of them. The potential public health impact of these findings is substantial. Assuming that 15% of returning veterans experience either PTSD or depression, there are roughly 60,000 OEF and OIF veterans with active psychiatric illness.

CHANGES IN RATES OF PROBABLE PTSD AND DEPRESSION ACROSS TIME

Studies of civilian victims of trauma generally show a decline in PTSD symptoms over time, although some studies show a waxing and waning course.^{13,14} Studies from DS/DS demonstrate two general courses of PTSD symptoms in veterans over time.¹⁵ Those with relatively low levels of symptoms initially following deployment have a relatively small change in symptoms at later evaluation. In contrast, those with higher levels of initial symptoms report a greater increase in symptoms with the passage of time. Another DS/DS study found a 3% rate of probable PTSD in veterans within 5 days of return from deployment, and an 8% rate of probable PTSD in the same group when sampled 18–24 months later.¹⁶ A third study of DS/DS veterans also found increasing rates of PTSD and severity of PTSD symptoms at 2 years following deployment compared to 1 month following deployment.¹⁷ These findings contrast those of civilian survivors of motor vehicle accidents, where very few individuals develop PTSD after the first month and the overall rates of PTSD decline consistently during the following year.¹³ These differences suggest that there is a different mechanism for the development and sustainment of PTSD in soldiers who experience repeated trauma during combat than for civilians who are exposed to a discrete traumatic event.

ONSET AND COURSE OF PTSD AND DEPRESSION IN BATTLE-INJURED SOLDIERS

One study of soldiers seriously injured in combat found surprisingly low rates of PTSD and depression in the first month following injury.¹⁸ When re-evaluated 3 and 6 months later, the rates of PTSD and depression had both risen and were similar to those of non-injured combat soldiers.¹² Of note, approximately 50% of those who initially met criteria for PTSD or depression no longer met criteria at 6 months, and nearly 80% of those who met criteria at 6 months had screened negative for both disorders at the initial evaluation. It was somewhat surprising that rates of PTSD and depression were not higher in injured soldiers, since earlier studies of terrorism survivors have found that injury during the attack was associated with a three-fold greater rate of PTSD and depression 2 years later compared to those not injured during the attack.¹⁹ However, this sample of injured soldiers was somewhat unique in that all injured soldiers received an extensive psychiatric evaluation and ongoing psychiatric treatment as indicated throughout the course of hospitalization for

their injuries. Early psychiatric intervention may have delayed or reduced the onset or severity of PTSD in this group.

Later onset of PTSD and depression in this group demonstrates the need for ongoing surveillance and availability of mental health services following return from deployment. Reserve and National Guard forces traditionally have difficulty accessing mental health care once they are demobilized. Since many of the troops returning from deployment are entering this demobilized status, this poses an additional public health challenge.

RATES OF PTSD AND DEPRESSION IN DEPLOYED HEALTHCARE WORKERS

A recent study of deployed and non-deployed healthcare providers from one military treatment center found a 7.5% rate of probable PTSD in those who deployed compared to a 1% rate of PTSD in those who did not deploy.²⁰ An association was found with degree of exposure to life threatening events, such as receiving incoming fire, but not with exposure to injured or dead soldiers and civilians. This finding contrasts earlier findings from non-medical terrorism survivors where exposure to injured and the dead was associated with higher levels of PTSD and depression 2 years after the attack.¹⁹ These findings suggest that exposures to traumatic events may have different psychologic effects based on an individual's professional experience and prior life experiences.

RECENT PTSD RESEARCH

Epidemiologic studies of PTSD vary widely in sample selection, timing of the assessment, setting for the assessment, and criteria for defining the presence of illness. The studies from the current conflicts were all conducted shortly after return from deployment in contrast to prior studies involving assessment years following combat exposure. While the three cited studies^{12,18,20} all used the PTSD checklist to determine the presence of PTSD, the Hoge¹² study involved anonymous paper surveys administered in a work setting, the Kolkow²⁰ study involved an Internet-based anonymous survey, and the Grieger¹⁸ study involved use of the instrument in conjunction with ongoing psychiatric treatment in a clinical setting. The presence of PTSD symptoms are common among all returning personnel. Persistence of symptoms across time, issues of reunion or return to a work setting other than combat, interpersonal difficulties arising in response to PTSD symptoms, substance use, and the development of comorbid disorders all contribute to conditions where the high levels of distress or functional impairment

required for the diagnosis of PTSD are more clearly evident. It would be premature to believe that the early reported rates of PTSD from the recent studies will reflect the eventual rates of PTSD and other psychiatric disorders in returning veterans.

TREATMENT CONSIDERATIONS

Deployment and deployment traumas are different for each war and different for each individual exposed to deployment and combat. As outlined in the American Psychiatric Association Practice Guidelines,²¹ any treatment program for patients with PTSD must begin with a detailed assessment of the patient. Practice guidelines provide both general and specific elements of evaluation. Components of the general assessment are outlined in Table 1. Some of the components of a military-specific evaluation are outlined in Table 2.

Multiple studies have found that the selective serotonin reuptake inhibitor (SSRI) class of antidepressants are effective in reducing the severity of intrusion, avoidance/numbing, and arousal symptoms in patients with PTSD.²²⁻²⁶ Many of the patients in these trials were experiencing chronic rather than acute PTSD, so the response to medication is very promising. Moreover, these trials demonstrated improved quality of life and continued effectiveness during continuation treatment.^{27,28} Most patients were female and only a small percentage had PTSD stemming from combat experiences. Response rates in predominantly male combat troops have been less promising. One international study²⁹ included predominantly combat veterans. The

response to medication was much less robust, but the study did demonstrate improvement with the use of fluoxetine at relatively high doses (mean=57 mg/day). This contrasts earlier studies that showed improvement in PTSD symptoms in non-combat veterans, but little improvement in Veterans Administration patients with PTSD.³⁰ These studies suggest that in addition to difference in onset and course of PTSD resulting from combat compared to PTSD resulting from individual civilian trauma, there may also be a different response to treatment. Schoenfeld and colleagues³¹ and Friedman³² provide comprehensive reviews of the evidence supporting the use of medications other than SSRIs for the treatment of PTSD, including the use of other classes of antidepressants, antiadrenergic agents, anticonvulsants, lithium, benzodiazepines, and antipsychotic agents. It should be noted that many of the studies included in the reviews were of open-label design or involved small numbers of subjects, and therefore do not substantiate changes in the standard of practice.

Cognitive-behavioral therapy (CBT) and specifically prolonged exposure therapy have been demonstrated as effective treatments for acute stress disorder, PTSD, and depression.³³ Most studies of psychotherapy for PTSD have been with victims of non-combat-related traumas, but there is also evidence of efficacy of these treatments for combat veterans with both acute and chronic PTSD. Unfortunately, many mental health professionals have not received formal training in CBT techniques and are not comfortable in performing this evidence-based treatment. Other unique variants of CBT, including virtual reality exposure and eye movement desensitization techniques, are also under investigation or have demonstrated some benefit to patients with PTSD. To date, there is no evidence

TABLE 1
ASSESSMENT OF PTSD FOLLOWING TRAUMA EXPOSURE²¹

1. Screen for acute and remote event exposure
2. Assess for symptoms of re-experiencing, avoidance/numbing, and hyperarousal
3. Obtain a detailed history of the event as well as the patient's response to the trauma
4. Obtain a longitudinal history of all traumatic experiences
5. Assess the patient's response to each traumatic event
6. Assess the full range, frequency, and severity of PTSD symptoms
7. Assess the degree of related distress or impairment
8. Assess for other psychiatric conditions; substance abuse issues; personal history; developmental history; and current family, social, and occupational supports
9. Assess for safety
10. Determine the patient's primary concerns and treatment preferences

Grieger TA, Benedek M. *Primary Psychiatry*. Vol 13, No 3. 2006.

TABLE 2
SPECIFIC ELEMENTS OF EVALUATION FOLLOWING MILITARY DEPLOYMENT²¹

1. Reasons for joining the military and expectations of military service
2. Length of service
3. Presence or absence of disciplinary charges or military awards
4. Presence of alcohol or other substance abuse
5. Family violence counseling/prior psychiatric evaluations
6. Frequency and effects of family separation
7. Details of combat exposures
8. Witnessing of atrocities
9. Seeing friends wounded or killed
10. Personal killing of others

Grieger TA, Benedek M. *Primary Psychiatry*. Vol 13, No 3. 2006.

that they demonstrate greater effectiveness than more traditional CBT approaches. Rauch and Cahill³⁴ review data supporting the use of exposure therapy, stress-inoculation training, cognitive therapy, eye-movement desensitization, and CBT in the treatment of PTSD. Similarly, Ruzek and colleagues³⁵ discuss at length the techniques and advantages of various forms of group psychotherapy for patients with PTSD.

Perhaps most important in the evaluation is a determination of what symptoms and functional impairments are most troubling to the individual veteran. This approach will greatly assist in the establishment of rapport and building a therapeutic alliance. It will also guide in the appropriate selection of pharmacologic and psychologic interventions. Rather than focusing primarily on PTSD symptoms, the returning veteran may be more concerned over issues of his or her substance use patterns, anger control, reintegration with family, reintegration with civilian employment, or dealing with injuries or changes in professional status or roles.

CONCLUSION

Warfare in the 21st century has markedly different characteristics compared to prior warfare environments. The nature of war exposures, nature of soldiers engaged in warfare, and duration and frequencies of deployment to the combat theater have resulted in different presentations of post-deployment psychiatric sequelae. Early sampling of service members returning from deployment shows a tendency of resilience for most. As past wars and some recent studies have demonstrated, the short-term findings may not accurately predict the long-term outcome for these service members. Ongoing surveillance will be vital to ensuring that appropriate mental health services are made available to those returning from deployment over time. A comprehensive assessment, followed by proper selection of pharmacologic and psychotherapeutic treatments, can optimize clinical outcome for those experiencing difficulties upon return from deployment. **PP**

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