

## Southern Illinois University Carbondale OpenSIUC

---

Research Papers

Graduate School

---

Spring 4-14-2011

# Gulf War Illness And Injuries

Dianna S. Inman

*Rehabilitation Institute*, [sdnman@siu.edu](mailto:sdnman@siu.edu)

Follow this and additional works at: [http://opensiuc.lib.siu.edu/gs\\_rp](http://opensiuc.lib.siu.edu/gs_rp)

---

### Recommended Citation

Inman, Dianna S., "Gulf War Illness And Injuries" (2011). *Research Papers*. Paper 75.  
[http://opensiuc.lib.siu.edu/gs\\_rp/75](http://opensiuc.lib.siu.edu/gs_rp/75)

This Article is brought to you for free and open access by the Graduate School at OpenSIUC. It has been accepted for inclusion in Research Papers by an authorized administrator of OpenSIUC. For more information, please contact [opensiuc@lib.siu.edu](mailto:opensiuc@lib.siu.edu).

GULF WAR ILLNESS AND INJURIES

by

DIANNA S. INMAN

Administration of Justice  
B.S., Southern Illinois University, 1999

A Research Paper  
Submitted in Partial Fulfillment of the Requirements for the  
Master of Science Degree

Department of Rehabilitation  
in the Graduate School  
Southern Illinois University Carbondale  
May 2011

RESEARCH PAPER APPROVAL

GULF WAR ILLNESS AND INJURIES

By

DIANNA S. INMAN

A Research Paper  
Submitted in Partial Fulfillment of the Requirements for the  
Degree of Master of Science  
in the field of Rehabilitation Counselor

Approved by:

Dr. D. Shane Koch, Chair

Graduate School  
Southern Illinois University Carbondale  
May 2011

AN ABSTRACT OF THE RESEARCH PAPER OF

DIANNA S. INMAN, for the Master of Science degree in REHABILITATION COUNSELOR, presented on May 2011, at Southern Illinois University Carbondale.

TITLE: GULF WAR ILLNESS AND INJURIES

MAJOR PROFESSOR: D. Shane Koch, Ph D., CRC

The Persian Gulf War, Afghanistan, and Iraq Enduring Freedom are wars our United States troops have been involved in the Middle East. The goal of this research paper is to present and discuss the injuries and illness some of our soldiers are experiencing in their tour of duty in the Middle East. I will focus on three conditions some of our veterans are suffering from, Gulf War Illness(GWI), Post Traumatic Stress Disorder (PTSD) and Traumatic Brain Injury (TBI). Diagnosis and treatment of PTSD, TBI, and GWI will be discussed.

## ACKNOWLEDGMENTS

I would like to thank my family whom I love and cherish, my husband Steve Inman, my children Dane, Clinton, and Carlie Inman for their continued support and encouragement throughout my education process.

I would also like to recognize my advisor and major professor for his assistance, Dr. D. Shane Koch, his guidance will always be appreciated.

A special thank you to Dr. John Benshoff, whom encouraged me to pursue a Master's Degree in Rehabilitation Counseling and to him for being such a good example to the Profession of Rehabilitation. Thank you.

## DEDICATION

This paper is dedicated to all military soldiers and veterans, their courage, sacrifice and training to defend our country and our freedom during war time will always be appreciated. Thank You.

A special dedication to my brother-in-law, Robert Cook. Robert served his country for 19 years in the United States Army, he sacrificed his health for our country in the first Gulf War. Robert suffers from Gulf War Illness. Daily living activities are now a struggle and the country and government Robert fought for, denies responsibility. Keep fighting Robert!

## TABLE OF CONTENTS

ABSTRACT .....	i
ACKNOWLEDGEMENTS.....	ii
DEDICATION.....	iii
INTRODUCTION.....	1
OVERVIEW OF LITERATURE .....	11
DISCUSSION AND IMPLICATIONS .....	30
REFERENCES .....	32
VITA.....	38

## STATEMENT AND DEFENSE OF THE PROBLEM

Our military soldiers who have served in the Gulf Wars, including Operation Desert Shield (ODS)/ Operation Desert Storm (ODS), Operation Iraqi Freedom (OIF), Operation Enduring Freedom (OEF) and Afghanistan, many are coming home with life changing and devastating health issues resulting from their service to our country. Some Persian Gulf War veterans developed health issues that range from multiple chemical sensitivity, chronic fatigue syndrome, fibromyalgia, brain cancer, amyotrophic lateral sclerosis, post traumatic stress disorder and a combination of unexplained illness, some being classified as Gulf War Illness also known as Gulf War Syndrome. Service in the current war, Operation Iraqi Freedom, Operation Enduring Freedom and Afghanistan, has resulted in two major health issues for some servicemen and women, Traumatic Brain Injury and Post -Traumatic Stress Disorder.

Within this paper exploration of current research about injuries and illness our soldiers are experiencing resulting from their service in the Gulf Wars. The controversy surrounding the Gulf War Illness (Syndrome) will be discussed; research and theories will be presented. Diagnostic and treatment criteria for service related illness, TBI, and PTSD will also be included within this paper.

### **Background**

Our military personnel have been highly trained physically and mentally to defend and protect our country when they are called to duty. The stress of war on our troops has



been physically and psychologically challenging. When leaving their families to serve our country the soldiers have many stresses to adjust to. Training given pre-deployment, during active duty, and post-deployment has been designed to help our soldiers adjust with as little effects as possible (Walser, 2007).

Many military personnel experience stress related to their deployment, service and return home. These quite natural stress reactions can range from mild to severe and may be either short lived or persist for very long time (Walser, 2007, p.195).

The health consequences, illness and injuries resulting from service of our military men and women after service to our country should be of concern and responsibility to us as a nation. Communities, families, and friends of military soldiers are dealing with the effects of the war on a daily basis.

Just how many troops will bring the war home with them is impossible to know at this point. But the numbers could be substantial. In a study published in 2004 in the New England Journal of Medicine, researchers at the Walter Reed Army Institute of Research found that nearly 17 percent of soldiers who have returned from Iraq, or nearly 1 in 6, showed signs of major depression, generalized anxiety, or PTSD. (Streisand, 2006, para. 7)

The result, our troops are coming home with injuries and illnesses which are not visible to the eye. A soldier's physical appearance may not have changed but an evaluation will often show how they have changed cognitively and emotionally. Diagnosis such as PTSD and TBI are often hidden disabilities a soldier may have, without proper assessment and evaluations they can suffer long term. Exposure to

chemicals and toxins such as in GWI may also cause medical issues which would result in veterans needing long term medical care. Our health care system and the Veterans Department need to prepare to help these veterans with the medical issues they are having from their service for our country. Twenty percent of GWV and forty percent of OIF/OEF veterans' are suffering from illness which warrants medical care (Owen, 2006).

The United States military has deployed 1.6 million personnel to Afghanistan, Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF) since October 2001. Many of the staff deployed are being physically and psychologically injured during their service in the Gulf region. PTSD, TBI and other various severe injuries are being reported (Frain, Bethel, & Bishop, 2010).

According to Gearhart (2007), mild traumatic brain injury is very common in the current war. Many soldiers are coming home from Iraq with TBI, PTSD or a combination of both. Soldiers after experiencing a roadside explosion may just shake off their symptoms which can exacerbate the problem (para. 6).

Mild traumatic brain injury, or mTBI, has been called the signature wound of the War on Terror. Identifying and treating that injury has become a priority for Army medical commands worldwide. The brain injuries our soldiers are being afflicted with from roadside bombs are uncommon injuries to our medical doctors, they are rushing to diagnosis and treat this injury epidemic. (Gearhart, 2007 para. 6)

As with TBI, GWS from Desert Storm has strained the VA system resulted in many soldiers being affected by ailments thought to be caused by their exposure to toxic substances. There have been many theories researched trying to discover a connection

between gulf war service and the resulting illness some servicemen are affected by.

Many veterans of the 1991 Gulf War have developed unexplained somatic and psychological symptoms and are more likely to suffer chronic ill health than matched control samples. The association between these symptoms and possible causal environmental exposures has been extremely controversial and remain unresolved (Deahl, 2006, pp. 257-258).

### **Significance**

Unseen injuries and illnesses have been causing many veterans and soldiers returning home serious health issues and medical problems. Seventeen years after the Persian Gulf War 1991 veterans are still suffering with debilitating illnesses. The government is still denying a Gulf War Syndrome, although we still have veterans suffering with real medical conditions (Moore, 2007, para. 6).

Information obtained from Veterans Benefit Administration, 11,000 of the 696,841 soldiers deployed in the first Gulf War have died of various illness and injuries and 256,000 have filed for claims for compensation. More veterans of the Persian Gulf War have died of disease than in the veterans of Vietnam War (Moore, 2007, para. 6).

Research presented to the Department of Defense at a meeting September 25, 2007 states;

Sixteen years after the Persian Gulf War ended, more than 1 in 4 of those who fought remain seriously ill with medical problems ranging from severe fatigue and joint pain to Lou Gehrigs disease, multiple sclerosis and brain cancer, the chairman of a congressional advisory committee testified Tuesday. But even as more is learned

about what's now called Gulf War Veterans Illness the Defense Department of Veterans Affairs remain in denial about its causes, and have been slow to offer treatment, said James Binns, the head of the research advisory committee on the disease. (Blumenthal, 2007, p.6 )

Medical care for our veterans has been in the headlines and the military along with the general public are demanding better health care for our men and women who have served our country. The conditions revealed at Walter Reed Military Center recently, have exposed the short comings of the military system (DOD Mental Health, 2007).

The cost of military service is substantial. Many costs are readily apparent; others are less important. Among the most pervasive and potentially disabling consequences of these costs is the threat to the psychological health of our nation's fighting forces, their families, and their survivors. Our involvement in the global War on Terrorism has created unforeseen demands not only on individual military service members and their families, but also on the Department of Defense, which must expand its capabilities to support the psychological health of its service members and their families. In particular, the system is being challenged by emergence of the two "signature injuries" from the current conflict, post-traumatic stress disorder and traumatic brain injury. These two injuries often coincide, requiring integrated and interdisciplinary treatment methods. New demands have exposed shortfalls in a health care system that in previous decades had been oriented away from a wartime focus (DOD Mental Health, 2007, p. 5).

### **Purpose and Objective of Paper**

The purpose of this paper is to explore illness and injuries acquired by our military men and women who have served in the Gulf Wars. Symptoms of illness and injuries and review of the various diagnostic tests which are given to our veterans for assessment and treatment, suggested recommendations will be reviewed. Some of the illnesses are very controversial (Gulf War Syndrome) and many theories exist to explain the veteran's medically unexplained physical symptoms. Other injuries/illness such as PTSD and TBI are of great concern to the military. Many military soldiers are being affected by PTSD, TBI and some soldiers have both conditions. GWS, PTSD, and TBI will be included in this paper, diagnosis criteria, research and treatment options will all be explored.

Medical care of our veterans will be a large issue for our health care system and the VA health care programs, GWI, PTSD, and TBI, these medical issues will also be included in the research.

### **Definitions**

#### **Gulf War Illness (GWI) Gulf War Syndrome (GWS)**

As stated in Medical Information for Recent Veterans (KCVA, 2010) brochure:

Gulf War Syndrome (GWS) or Gulf War Illness (GWI) are names given to a group of illnesses associated with service during Desert Shield and Desert Storm. There is considerable confusion concerning these very real ailments, because they encompass more than one ailment. Theories about the cause of these illnesses often point to reactions to substances (alone or in combination) have been theorized to include:

- . The nerve gas defense pill (PB tablet) pyridostigmine bromide

- . Low-level nerve gas from destroyed munitions
- . Excess and multiple insecticides and repellents
- . Dust from depleted uranium (DU) in or on vehicles struck by DU munitions
- . Certain immunizations
- . Infectious agents occurring naturally in the region
- . Pollutants from oil wells

Because there appear to be multiple syndromes, symptoms may vary depending upon exposure. Some symptoms that may be or have been present at some point include:

- .chronic fatigue
- .weakness or loss of muscle control
- .diarrhea, indigestion or other gastrointestinal problems
- .migraines and/ or loss of balance
- .memory loss
- .difficulty concentrating
- .muscle and/or joint pain
- .skin problems
- .shortness of breath

Since these symptoms are common to other disorders, some skeptics don't recognize how real this problem is. Scientific research has demonstrated higher rates for these problems than in comparable veterans who were not deployed. (KCVA, 2010, brochure)

### **Undifferentiated Somatoform Disorders**

Diagnostic criteria for 300.82 Undifferentiated Somatoform Disorder as stated in DSM-IV-TR, 2000;

A. one or more physical complaints (e.g., fatigue, loss of appetite, gastrointestinal or urinary complaint).

B. Either (1) or (2):

(1) after appropriate investigation, the symptoms cannot be fully explained by a known general medical condition or the direct effects of a substance of abuse (e.g., a drug, a medication).

(2) when there is a related general medical condition, the physical complaints or resulting social or occupational impairment is in excess of what would be expected from the history, physical examination, or laboratory findings.

The symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.

D. The duration of the disturbance is at least 6 months.

E. The disturbance is not better accounted for by another mental disorder (e.g., another Somatoform Disorder, Sexual dysfunction, Mood Disorder, Anxiety Disorder, Sleep Disorder, or Psychotic Disorder).

F. The symptom is not intentionally produced or feigned (as in Factitious Disorder or malingering). (pp. 490-491)

### **Post-Traumatic Stress Disorder**

Diagnostic features of Post-traumatic Stress Disorder 309.81 as stated in the DSM-IV-

TR, 2000;

The essential feature of Posttraumatic Stress Disorder is the development of characteristic symptoms following exposure to an extreme traumatic stressor involving direct personal experience of an event that involves actual or threatened death or serious injury, or injury, or threat to the physical integrity; or witnessing an event that involves death, injury, or threat to the physical integrity of another person; or learning about unexpected or violent death, serious harm, or threat of death or injury experienced by a family member or other close associate (Criterion A1). The person's response to the event must involve intense fear, helplessness, or horror (or in children, the response must involve disarranged or agitated behavior) (Criterion A2). The characteristic symptoms resulting from the exposure to the extreme trauma included persistent experiencing of the traumatic event (Criterion B), persistent avoidance of stimuli associated with the trauma and numbing of general responsiveness (Criterion C), and persistent symptoms of increased arousal (Criterion D). The full symptom picture must be present for more than 1 month (Criterion E), and the disturbance must cause clinically significant distress or impairment in social, occupational, or other important areas of functioning (Criterion F). ( p.463 )

### **Traumatic Brain Injury**

As stated in the National Institute of Neurological Disorders and Stroke brochure:

Traumatic brain injury (TBI), also called acquired brain injury or simply head injury, occurs when a sudden trauma causes damage to the brain. TBI can result when the head suddenly and violently hits an object, or when an object pierces the skull and



enters brain tissue. Symptoms of a TBI can be mild, moderate, or severe, depending on the extent of the damage to the brain. A person with mild TBI may remain conscious or may experience a loss of consciousness for a few seconds or minutes. Other symptoms of mild TBI include headache, confusion, attention, or thinking. A person with a moderate or severe TBI may show these same symptoms, but may also have a headache that gets worse or does not go away, repeated vomiting or nausea, convulsions or seizures, an inability to awaken from sleep, dilation of one or both pupils of the eyes, slurred speech, weakness or numbness in the extremities, loss of coordination, and increased confusion, restlessness, or agitation (NINDS, 2008).

## OVERVIEW OF THE LITERATURE

GWI, TBI, and PTSD are three conditions that are present in some of our veterans who fought in the Gulf Wars. Our veterans are adjusting to a life with injuries and illness, some with physical and emotional scars that have changed who they are as veterans. These soldiers are different than when they left to defend our country. An inter-disciplinary approach including medical doctors, counselors, and occupational therapist are a few who may aid in their recover and life adjustment. GWI, PTSD, and TBI information will be discussed in the following sections.

### **Gulf War Illness**

August 2, 1990 Saddam Hussein and his military invaded Kuwait. In August over 31 nations in a United Nation coalition began troop build up to force Iraq out of Kuwait and to give protection for neighboring Saudi Arabia. Approximately 700,000 troops were sent to the region. January 17, 1991 United States troops and coalition forces began air attacks over Baghdad and several other key Iraqi targets, this started Operation Desert Storm (Leyden, 1997).

Beginning February 24, 1991 at 4:00 A. M. (G-Day) ground offensive began by U.N. forces. Iraqi soldiers retreating from Kuwait set oil fields on fire causing one of the largest environmental disasters. Approximately 500 oil wells were set on fire and were burning. Marines near this area could not see over ten feet in front of them. Smoke, soot, and oil from the burning wells were burning the soldiers throats, oil covered their uniforms and made seeing difficult. On the second day of the ground offensive, troops were in sandstorms breathing and inhaling sand particles. By the third day high tech

equipment help coalition forces advance and take over highway 8 where some Iraqis in a disorganized retreat after looting, died when their vehicles were hit by aircraft. Highway 8 was known as the “highway of death” because of some of the burned copse in the wreckage. Seeing burned corpses was shocking for some military forces. The ground offensive lasted just 100 hours ending February 28, 1991 when President Bush called a cease-fire at 8:00 A.M. (Leyden, 1997).

Desert Storm was a war using high technology, few casualties, victory forcing Iraq from Kuwait, we were a country proud of our veterans. Then some returning soldiers started complaining of medically unexplained physical symptoms (MUPS). These soldiers went to war in peak physical condition. Symptoms showing up in returning veterans were dizziness, cognitive problems, migraines and headaches, central nervous system functions, respiratory problems, skin rash, digestive problems, joint pain and sleep disorders (Cassaday & Ferguson, 2002).

Uncertain causes for the symptoms caused the Department of Defense (D.o.D.) to start research about post-deployment health. Unexplained physical symptoms have been recorded as affecting our veterans since the Civil War (Chadler, 2007). A Post-Deployment Health Guideline (PDH-CPG) was created by the Department of Defense and Veterans Affairs. With-in this guide is diagnosis, treatment, and a referral guide for veterans suffering from medically unexplained physical symptoms or MUPS (DHCC brochure, 2010).

Government denied a GWS saying there is no syndrome. In an article for the associated press Dr. Lynn Goldman of John Hopkins University said “There’s no unique

pattern of symptoms. Every pattern identified in Gulf War veterans also exist in other veterans, though it is important to note the symptom rate is higher, and it is a serious issue.” (Boston, 2006, Sept. 13 )

Adding to the speculation and questions a book written by A. Leyden-*Gulf War Debriefing Book: An After Action Report* , included the following;

More and more soldiers, through a network of veterans groups and hospitals, began to relay their symptoms to one another, creating a database of information as to what was wrong with them. They brought this to the attention of the Pentagon, giving their affliction a name-Persian Gulf War Syndrome.

Speculation centered around chemical or biological weapons release, or on the experimental medicine given to troops to counter these weapons. Hearings were held in Congress and researchers, both government and private, began a massive series of investigations. For years the Pentagon stood behind the line that there was no “single” Gulf War Syndrome, as the affliction varied from soldier to soldier, nor could any one cause be found that would have resulted in so various a number of symptoms.

However as a result of heavy pressure from suffering veterans, the Pentagon later admitted that some chemical weapons were released during the destruction of a chemical facility and these weapons may have contaminated some coalition forces (Leyden, 1997, pp. 201-202 ).

Milano (2000), presented four theories:

There were several theories that were being investigated for the illness our veterans suffer from. There were four categories:

1-That chemical and biological weapons were indeed used by Iraq and/or U.S. soldiers were otherwise exposed as a result of U.S. bombing.

2-That an infectious agent, still undiscovered, and perhaps endemic to the region, is responsible;

3-That a “toxic soup” of substances, encompassing everything from investigative drugs to depleted uranium, created a new disease: and/or

4-That stress and other psychological conditions have led to physiological disorders.

All the evidence pointed to number four-psychological causes as the primary cause for a broad “syndrome” until the June 21, 1996 announcement by the Pentagon that postwar Army demolition operation at Iraqi ammunition storage depot called Khamisiyah may have exposed U.S. soldiers to chemical agents.

As a result of the revelation, the defense Department shifted its line that the veterans “are experiencing real symptoms and illnesses with real consequences” (Milano, 2000, pp.10-16).

Investigators uncovered the explosion at Khamisiyah, Iraq in March 1991, these explosions released mustard gas and the nerve gas Sarin. During the allied attacks in Iraq there were four nuclear facilities, eighteen chemical and twelve biological facilities bombed. U.S. Satellite images show clouds drifting over the entire theater causing a poisonous rain, exposing our troops to these chemicals. The pentagon argued the fallout from these explosions would be to minimal to cause long term or permanent damage to soldiers. Critics argue the Pentagon does not have research or test to show what the minimal amount of exposure would be to cause long term effects (Milano, 2000).

The nature of an exposure in combat situations is not as simple as one might think. A large variety of factors can greatly impact the effective exposure that a soldier receives. Temperature, humidity, skin moisture, exposed surfaces, fit of personal protective equipment, pretreatment (in the case of nerve agents), wind strength and direction, whether the agent is in liquid or vapor form, activity level of the soldier (at rest or running), host susceptibility factors and other factors makes the estimation of a field does a very complex problem. A soldier that is “hit” with nerve agent (show signs and symptoms of nerve agent exposure) may be standing close to another soldier who has no signs and symptoms at all (Perrotta,1996, para.43, discussion section ).

Another theory being investigated as cause for veteran’s illness was the experimental drug, pyridostigmine bromide (PB), which was issued to approximately 400,000 soldiers to protect them from a nerve gas attack. The PB pill when combined with other chemicals such as Deet spray (an insect repellent) can cause neurological damage. Deet was provided by the D.o.D. to the troops for use against insects and used heavily on uniforms. The Department of Defense was given a waiver from the Food and Drug Administration to administer the PB drug. Service personnel were not warned about the side effects of the drug which is breathing problems, vomiting, memory loss, speech disorders. Other drugs that were given were pentavalent botulinum-toxoid for botulism and anti-anthrax vaccine both experimental and unlicensed (Milano, 2000).

Article, *Gulf War Illness: Lessons from medically unexplained symptoms*, the authors found;

Veterans are still suffering from many medical issues years later.

Even if medical research has failed to provide a satisfactory explanation, it remains the case that many of those affected continue to be unwell and disabled some 15 years after returning from combat. For this reason, it is time that more attention is given to developing effective interventions to relieve their ill-health and distress

(Chadler, Iverson & Wessely, 2007, p.842 ).

The military has taken proactive steps to deal with soldiers going to war in Iraq 2003 and planning to prevent their soldiers from having to deal with what Desert Storm veterans have dealt with, unexplained medical problems. This time in the desert of Iraq environment monitoring and accurate record keeping will help the military to know what soldier was where and who was exposed to what, unlike the first gulf war when the military could not even tell what soldiers were given vaccines. Collection of better data, soil, air and water samples are being collected by environmental teams and geographic positions of each unit will also be recorded. Ammunition depot will also be approached in a more cautious manner guarding against accidental exposure of harmful chemicals to our troops that happened at Khamisiyah. Michael Kilpatrick, deputy director of the U.S. Department of Defense Deployment Health Support Director states. "We have learned our lessons". "I'm confident that we're well prepared to welcome our veterans home (Enserink, 2003, p. 1966).

Charles Engel, a researcher and clinician at Walter Reed Army Medical Center in Washington, D.C. "Acknowledging the problems and addressing them early on, instead of shuffling veterans through the medical system in a fruitless search for answers, may in itself prevent a "snowball" effect of illness, worries, and suspicions." The military has

received some positive support after passing a law requiring each soldier give a serum sample before and after each deployment also development of a Defense Medical Surveillance System containing all medical records and blood serum of all military soldiers. This system is valuable for research and could enable scientist quick answers (Enserink, 2003, p. 1966).

There is no treatment specifically for GWI, each symptom is treated and medication is prescribed. Dr. Meryl Nass, MD. in an article Thoughts on treatment of Gulf War Syndrome patients, will assist GWI patients to manage symptoms and attempt to lead a productive life. Dr. Nass evaluates every aspect of the patient's life, including sleep patterns, pain levels, physical alignment, fatigue, cognitive functioning, gastrointestinal functioning, and psychological stability. Treatment of GWI may include family members. There is research which suggests transmissible agents may be affecting family members of Gulf War veterans and they are suffering the same symptoms as GWI patients (Nass, 2003).

### **Post Traumatic Stress Disorder**

After experiencing a life threatening traumatic event with potential of serious injury or death such as combat a veteran may suffer from PTSD. A veteran can have prolonged, intense fear, and feelings of hopelessness. A few symptoms of PTSD are avoidance behavior of the incident, hyper-vigilance, and irritability. The result of PTSD can be short-term memory loss, personality changes, insomnia, and a decrease in concentration (Military One Source, 2007).

An article in Mental Health Practice by author Shan Yaso states;



“A lack of understanding, treatment and special long term care for service men and women returning from war is going to have a devastating impact on families, colleagues, the community and society as a whole in years to come”...Many health professionals remain unaware of the range of emotional and psychological trauma, the risk of self harm or indeed harm to others, as well as the long-term physical damage to those who resort to drugs and alcohol to cope with the horrors of war (Yaso, 2007, para.1).

Clinical Psychologist Army Col. Kathy Platoni states “Soldiers who are routinely exposed to the trauma of killing, maiming, and dying are much more likely to bring those problems home” (Streisand, 2006, p. ).

Veterans with PTSD have higher medical treatment and show problems with alcohol, employment, relationships, and daily living. PTSD is associated with abusive relationships and suicidal thoughts. (Streisand, 2006).

The current war IOF estimates approximately 17-25 percent of returning soldiers have some level of PTSD. This number is only associated with the soldiers who self disclose or are having significant enough daily issues to seek help or through mandatory discharge assessments. How many are affected with PTSD who do not at assessment disclose because their immediate concern is to get home to what they think their normal life will be, or the soldiers who are career military who do not want the stigma of mental health issues in their personnel file (WRAIR, 2006, *10 Tough Facts*)?

As war progresses there are programs being developed to aid a soldier in combat deal with psychological war issues. One such program is called Battlemind developed by

Walter Reed Army Institute Research (WRAIR, 2006). Battlemind stands for:

- .Buddies (cohesion)
- .Accountability
- .Targeted Aggression
- .Tactical Awareness
- .Lethally Armed
- .Emotional Control
- .Mission Operation Security
- .Individual Responsibility vs. Guilt
- .Non-defensive (combat) Driving vs. Aggressive Driving
- .Discipline and Ordering vs. Conflict

The Battlemind program developed in 2003, is a psychological resiliency program available for soldiers, troop leaders, health care providers and family of soldiers.

Although a section is available for military families, the program is mandatory for all military pre-deployment (WRAIR, 2006, Battlemind Training II).

The focus of Battlemind is mental toughness and self-confidence of the soldier. There are three stages in Battlemind training; Stage one-Deployment which includes seven phases for the soldier to complete, there is information given at specific intervals Stage two is Life Cycle which includes occurrences during deployment accumulative effect of deployment. The third stage is Soldier Support which is post deployment and the transition home. Data suggest this program is easy for military personnel to use. The Battlemind program has been modified several times over the past seven years.

Battlemind began as a power point presentation which was not as effective. Audiovisual was added to the presentation program and now Battlemind is using video to aid in teaching the information. The information reviewed shows the Battlemind program which is now called Battlemind Warrior Resiliency is showing positive effect for returning soldiers (WRAIR, 2006, *Battlemind Training II*).

United States Department of Veterans Affairs has established The National Center for PTSD. This program was designed to assist veterans with stress disorders. The VA has an on-line Clinicians Guide that includes questions about veteran's combat exposure, quality of life upon return home, and levels of everyday functioning of returning veterans. A veteran can access the on-line site, read information that pertains to their symptoms or behaviors and from there if they need to request clinical services they can do so (USDVA, 2007).

There are many areas which should be addressed when developing treatment and support programs for military and their families. The following are a few presented to the Department of Veteran Affairs Research and Development meeting (2006):

Some important areas for design and testing of innovative behavior intervention included "brief intervention in the war zone; evaluation of different therapist (eg., exposure therapy, cognitive processing therapy, cognitive therapy, stress inoculation training, coping skills training approaches) and their approaches (eg., education, self monitoring, goal-setting, problem-solving) in active duty and veteran populations; group-based intervention; strengthening of different forms of social support; brief interventions to reduce alcohol consumption; intervention to enhance reintegration

programs that reduce anger, violence in the community and domestic violence; reducing isolation; web and telephone-delivered services; traumatic bereavement interventions; focal interventions targeting specific problems such as problematic driving behavior, weapons keeping, social isolation/ withdrawal, and family communication problems; self-help groups for veterans; and returnee and family training for reintegration (NIMH, 2006. *Mapping the landscape...*).

Different treatment methods used for PTSD are Behavior Therapy, Cognitive Behavioral Therapy, Medication, Relaxation techniques, and Exposure Therapy. The American Psychiatric Association states, “Today psychiatrists and other mental health professional have good success in treating the very real and painful effects of PTSD. They use a variety of treatment methods to help people with PTSD to work through their trauma and pain ” (American Psychiatric Association, 2005. *Let’s talk facts about PTSD*, para.8 ).

Cognitive Behavioral Therapy (CBT) is a treatment options which includes relaxation techniques, correcting thought patterns and confrontation of psychological conflicts to assist the client in refocusing and correcting their thought pattern. Exposure Therapy treatment is done in a safe and controlled environment, re-exposing the client to the “triggers” or stimuli which is causing them conflict and their fear is consistently diminished. Coping skills training and cognitive restructuring are tools used in exposure therapy. This therapy can be done progressively in small steps with gradual exposure or a client may chose “flooding” which all stimuli is used at once. Psychodynamic Psychotherapy is used assisting clients to assess their personal values and their past

experiences during the traumatic event. Family Therapy is useful for returning veterans and their families. Family therapy helps the family members be educated about PTSD, what they can do to help the veteran, conflict resolution, and danger signs to look for in their loved ones. Peer Group Counseling is helpful for returning veterans. Survivors of similar events can share and understand what their peers are going through. Medication can also be helpful to elevate symptoms and stress clients maybe experiencing (American Psychiatric Association, DSM-IV-TR, 2000).

### **Traumatic Brain Injury**

Occurring on a daily bases in Iraq and Afghanistan our soldiers are being attacked and are receiving war wounds from impoverished explosive devices (IED) and rocket-propelled grenades. The current war in Iraq and Afghanistan has affected some of our military personnel with unseen injuries called traumatic brain injury. In a recent Department of Veterans Affairs information booklet stating 3 out of 4 combat injuries our soldiers in Iraq are receiving are from small arms and explosive devices (Department of Veterans Affairs ,April, 2007).

“Shell shock” and “getting your bell rung” are lay terms for traumatic brain injuries, which have been labeled the signature wound of Operation Iraqi Freedom (Fleming-Michael, 2007 June, para.1).

Traumatic brain injury can be caused by being near an explosive or blast, being hit on the head or being involved in an accident. There are factors one has to consider when assessing a person thought to have a TBI injury. A variety of factors contribute to the extent of the injury, including the distance the victim is from the blast, the surrounding

environment (that is, water versus air), the size of the surrounding environment (that is open verses closed), and the composition of the explosive materials (that is high verses low explosion). Although improvements in body armor and better medical treatment on the frontlines are saving soldiers' lives from devastating blast injuries, more war wounded are returning with multiple complex injuries or "Polytrauma" (OIF/OEF ReviewVA.GOV April, 2007).

In an article *Hidden Wounds* Paul Sullivan stated;

"TBI is going to be the worst story in terms of returning veterans," an advocate with Veterans for America. He estimates that anywhere from 160,000 to 320,000 service members and veterans are suffering from some degree of TBI today, "most of which are unscreened, undiagnosed, and untreated" (Vlahos, 2007, para.9).

Fort Carlson Army Base in Colorado conducted a study of its returning soldiers its reveled 18 percent of its soldiers was coming home with a brain injury. Other reports showed troops deployed to Iraq and Afghanistan 10-30 percent were exposed to explosions such as bombs (Vlahos, 2007).

According to Vlahos, 2007, improvements in body armor and better assessment within the combat field of TBI have improved service member's chance for a faster and more accurate recovery. In Iraq for every 1 soldier killed, 16 have been wounded. In Vietnam for one soldier killed 2.5 were wounded. Improved body armor and emergency medical responses, today the military is bringing more soldiers and marines home alive-battered, shattered, and transformed, but not in body bags that drove a nation to disenchanting departure from Southern Asia (Vlahos, 2007, para. 7).

Research by Okie, stated the following;

Kelver body armor and helmets are one reason for the high proportion of TBIs among soldiers wounded in the current conflicts. By effectively shielding the wearer from bullets and shrapnel, the protective gear has improved overall survival rates, and Kelver helmets have reduced the frequency of penetrating head injuries. However, the helmets cannot completely protect the face, head and neck, nor do they prevent the kind of closed brain injuries often produced by blasts. As insurgents continue to attack U.S. troops in Iraq, most injuries are being caused by improvised explosive devices (IED) and closed brain injuries outnumber penetrating ones among patients seen at Walter Reed, where more than 450 patients with TBI were treated between January 2003 and February 2005 (Okie, 2005, para.11).

The brain injury can be classified as mild, moderate, or severe. With moderate and severe brain injuries diagnosing the injury is much easier than diagnosing mild brain trauma (Fleming-Michael, 2007).

Department of Veterans Affairs article, *Blast Injuries Produce Many Different Patterns of Injuries* 2007: the article states the following categories:

Blast injuries typically are divided into four categories: primary, secondary, tertiary, and quaternary or miscellaneous injuries. Individuals may sustain many injuries from one or more of these mechanisms:

(1) Primary blast injuries are caused by overpressure to gas containing organ systems, such as the lung, bowel, and inner ear. Primary blasts may also result in traumatic limb or partial limb amputation.

(2) Secondary blast injuries occur from fragments and other missiles, causing head injuries and soft tissue trauma. Fragments also may be contaminated, which can cause infection.

(3) Tertiary blast injuries result from displacement of the whole body by combined pressure loads (shockwave and dynamic overpressure). These injuries also are called “displacement injuries” and may include head injury, broken bones, tissue damage, and other injuries.

(4) Finally there are miscellaneous blast-related injuries such as burns, smoke inhalation, and crush injuries from collapsed structures and displaced heavy objects. (Belanger & Scott, 2007, p.1).

When an explosion happens or IED incident the soldiers are evaluated for TBI.

M.A.C.E. which stands for Military Acute Concussion Evaluation (MACE) is a quick four question exam and used on the combat field for potential TBI exposure. In the battlefield, soldiers are given a four question evaluation after being stunned or dazed by and IED. MACE is a mental status exam and can show immediate signs of TBI and need for advanced medical health care. Military Acute Concussion Evaluation (MACE) assessment is given to soldiers immediately following explosions. Soldiers may try to just shake off what they think is nothing and after returning from combat problems surface. The four questions on the MACE exam are questions about orientation, immediate memory, concentration, and memory recall abilities (Belanger,&Scott, 2007).

Dr. S. Okie (2005) found at Walter Reed the severity of TBI is assessed according to the duration of loss of consciousness and post-traumatic amnesia, according to Louis M.



French a neurophysiologist who is DVIBC's clinical director. A mild TBI (which is usually not associated with visible abnormalities on brain imaging) is one that causes loss of consciousness lasting less than 1 hour or amnesia lasting less than 24 hours. A moderate TBI produces loss of consciousness lasting between 1 and 24 hours or post-traumatic amnesia for one to seven days. Injuries causing loss of consciousness for more than 24 hours or post-traumatic amnesia for more than a week are considered severe (Okie, 2005).

National Institute of Neurological Disorders and Stroke describes the symptoms of TBI in the brochure;

Other symptoms of TBI include headache, confusion, lightheadedness, dizziness, blurred vision or tired eyes, ringing in the ears, bad taste in mouth, fatigue or lethargy, a change in sleep patterns, behavioral or mood changes, and trouble with memory, concentration, attention, or thinking. A person with moderate or severe TBI may show these symptoms, but may also have a headache that gets worse or does not go away, repeated vomiting or nausea, convulsions or seizures, an inability to awaken from sleep, dilation of one or both pupils of the eyes, slurred speech, weakness or numbness in the extremities, loss of coordination, and increased confusion, restlessness, or agitation (National Institute of Neurological Disorders and Stroke, 2008).

There can be physical, cognitive, and behavioral changes that can occur after the TBI. Tennessee Rehabilitation Center TBI program resource packet describes three changes a person may be affected by who acquired a TBI.

1. Physical symptoms of brain injury (eg, nausea, vomiting, dizziness, headache, blurred vision, sleep disturbance, quickness to fatigue, lethargy, or other sensory loss) that cannot be accounted for by peripheral injury or other causes;
2. Cognitive deficits (eg. involving attention, concentration, perception, memory, speech/language, or executive functions) that cannot be completely accounted for by emotional state or other causes; and
3. Behavioral change(s) and/or alterations in degree of emotional responsibility (eg, irritability, quickness to anger, disinheriting or emotional liability) that cannot be accounted for by a psychological reaction to physical or emotional stress or other causes (TBI Resource Packet, 2010).

Listed in the Traumatic Brain Injury survival guide Dr. Glen Johnson a Clinical Neuropsychologist explains only 5 percent of head trauma patients have seizures. Grand Mal, complex partial seizures, simple or partial seizures are several seizures. With simple or partial seizures as a simple movement will happen such as arm movement or twitching. Complex partial seizures include movements several movements in combination (Johnson, 2010).

The center for Disease Control and Prevention estimates approximately 5.3 million people are living with the effects of traumatic brain injury. A person with mild TBI can recover from it usually within a year, moderate or severe TBI can affect a person lifelong. There are other factors that have to be considered when recovering from TBI. If a person has other sensory injuries in combination with TBI injury, recovery may take longer and be more difficult (Johnson, 2010).

Recovery for service members with TBI sometimes takes several team members. Immediately following a TBI in the combat zone fellow military medics respond to injured soldiers. The first support team members are fellow soldiers who respond on the scene of the explosion. In theatre MACE exam is given and the soldier are examined for brain concussion and injury. The second support group are advanced health professional who assess a soldiers physical and psychological exam. Rehabilitation staff is included in this recovery team. The third support group is soldier's family. When the soldier returns home, it is the family who see the veterans on an everyday basis. The soldier's family can witness the change in the returning soldier. Headaches, memory loss, word finding, fatigue, emotional changes, sleep pattern changes, impulsiveness, easily distracted, and unorganized activities are signs of a TBI that loved ones will notice (Johnson, 2010).

There are four Poly-trauma centers established to assist the VA to help TBI injured soldiers. These poly-trauma centers are located in Tampa, FL., Richmond, VA., Palo Alto, CA., and Minneapolis, MN. And aid soldiers in programs such as Wounded Warrior, Emergency care, and Transfer in Care programs. Experts in the fields of psychology, rehabilitation, medical, prosthetic experts are all within one center to help wounded soldiers (Hoffman, Cohen, & Mulligan, 2010).

Information provided by the National Institute of Health states treatment of individuals with TBI should begin immediately after they are stable. Stability and no further harm to the brain are the first steps of treatment. Adequate oxygen and blood flow to the brain is important to someone suffering a brain injury. If necessary a CT

scan is performed to evaluate the brain injury (NINDS, 2008).

Once the individual with a TBI is stable their treatment is planned. There is not a standard treatment for TBI, each plan is individual. The treatment team can include speech, occupational, vocational, physical therapies, and physiatrists (Degeneffe, 2001).

### **Key Findings**

Review of the literature reveals the importance of addressing GWI, TBI, and PTSD. In the veterans population these three conditions are documented and the VA system is being filled to capacity with waiting list for our veterans. TBI and PTSD are in the news daily and are affecting many of our military men and women. GWI is affecting veterans 19 years after the war ended.

These three conditions can have life changing effects to our veterans. Challenges to assess and evaluate for treatment conditions that are similar to other diseases and disorders have been an issue with GWI. Doctors are treating the GWI symptoms with a small percentage of success. A veteran can have TBI and PTSD, which causes assessment issues for the treatment team. PTSD does have specific treatment available. GWI and TBI diagnosis is more individualized and challenging for the rehabilitation team. CBT has shown some success in all three conditions, teaching a veteran how to live and function with their injury or illness.

The military has taken steps to try to prepare soldiers who are being deployed for the mental stress they are going to encounter. Battlemind is a mandatory program which has shown positive results in the Army. Research and improved treatment is needed to help our wounded soldier.

## DISCUSSION AND IMPLICATION

### **Summary of Key Findings**

Our soldiers are at greater risk than the regular population to acquire injuries and illness. GWI, TBI, and PTSD have become health issues some of our veterans have been treated for in the VA. Proper assessment and treatment for veterans to improve their quality of life is essential and should be a great concern for the Rehabilitation field. The veteran with GWI struggles not only with real symptoms, but with not being acknowledged until recent Congressional panels in 2008 stated there may be legitimate causes for the Desert Storm veterans condition. Many of these veterans were treated as if they were malingerers.

In the current Gulf War, PTSD and TBI are unseen injuries and illness. You may see a veteran who physically looks fine but is suffering and functions at a low level.

The War on Terror is affecting our soldiers psychological health resulting with an increase of PTSD diagnosis. The VA is rushing to accommodate this health crisis.

Treatment for GWI, TBI, and PTSD is varied. GWI treatment deals with easing the symptoms. TBI and PTSD may use several treatments for recovery, several treatment professionals may be involved in recovery and rehabilitation. Helping veterans achieve their highest level of functioning and to lead an independent life free of pain and successful daily living task are rehabilitation goals.

### **Implications for Rehabilitation Professionals**

The education and training requirement for Rehabilitation professionals is important to assist veterans who suffer from GWI, PTSD, and TBI to recover. A rehabilitation professional must keep up to date with research and new treatment methods in the care of veterans who are recovering from life changing illness and injuries.

Statistics have been published stating an increase of soldiers returning from the current war with PTSD and TBI. More veterans are being treated at the VA hospital and being referred for advanced treatment from their primary doctors treating the signature wounds of Iraq War.

Professionals who deal with these veterans should be knowledgeable to identify symptoms and assist in development of a treatment plan and aid in a veterans recovery. Quality care is optimal goal for the rehabilitation team and the veteran. If setbacks or challenges occur, proper training should be provided.

When providing care, all daily living abilities and challenges should be assessed. Family support, vocational abilities, physical challenges and mental health issues should be part of the treatment plan. Professional should be aware of any cultural bias while assisting a veteran in recovery.

Increased research concerning GWI, PTSD, and TBI and veterans rehabilitation and treatment is important with the increase in injured and ill soldiers. Keeping current on all new research and effective care is essential for success in the field of Rehabilitation.

## REFERENCES

- American Congress Of Rehabilitation Medicine (2007). Mild Traumatic Brain Injury Committee of the Head Injury Interdisciplinary Special Interest Group of the American Congress of Rehabilitation Medicine: Brain Injury Definition. Retrieved from <http://www.tbilaw.com/rehabdefinitionpage.php>
- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders*. (Revised 4th ed.). Washington, DC: Author.
- American Psychiatric Association, (2005). Let's talk facts about posttraumatic stress disorder. Retrieved from <http://bronxpsych.orgfactsheets/ptsd.pdf>
- Associated Press ,Washington. (2006, Sept. 13). Report to VA rejects GWS. Retrieved 2011-01-14 from [http://article.boston.com/2006-09-13/news/29246036\\_1\\_gulf-war-veterans-illness-veterans-affairs-research](http://article.boston.com/2006-09-13/news/29246036_1_gulf-war-veterans-illness-veterans-affairs-research)
- Belanger, H.,& Scott, S. (April, 2007). *Blast Injury: IED's as the current weapon of choice*. [Brochure]. Operations Iraqi Freedom/ Enduring Freedom Review. Vol.4, No. 1. Washington, DC: Department Of Veterans Affairs.
- Blumenthal, L. (2007, Sept 25). One -fourth of Gulf War veterans ill. *McClatchy Washington Bureau.Meeting*. Retrieved from:[neurotalk.psychcentral.com/showthread.php?t=2885](http://neurotalk.psychcentral.com/showthread.php?t=2885)
- Cassaday, H. F. (2002). Theoretical accounts of Gulf War Syndrome: From environmental toxins to psychoneuroimmunology and neurodegeneration. *Behavioural Neurology*,13(1), 133-147.

Chalder, T. I. (2007). Gulf War Illness: Lessons from medically unexplained symptoms.

*Clinical Psychology Review*, 27(7), 842-854.

Deahl, M. (2006). Gulf War Illnesses: Trauma and stress related illness. *Psychiatry*, 5(7),

257-258.

Degeneffe, C. E.(2001). Family caregiving and traumatic brain injury. *Health and Social*

*Work*, 26(A), 257-268.

Department Of Defense Task Force On Mental Health (2007).An Achievable Vision:

Report of the DoD Task Force on Mental Health. Meeting, Falls Church, VA:

Defense Health Board Retrieved from: [health.mil/dhb/mhtf/mhtf-report-final.pdf](http://health.mil/dhb/mhtf/mhtf-report-final.pdf)

Deployment Health Clinical Center.(2010). *Medically Unexplained Physical Symptoms*

*(MUPS): A Guide for Re-Deploying Service Members*.[Brochure]. Deployment

Health Clinical Center (DHCC): Retrieved from:

<http://pdhealth.mil/clinicians/download/track1.pdf>

Enserink, M. (2003). Bracing for Gulf War Syndrome II. *Science*, 299(5615), 1966-1967.

doi:10.1126/science.299.5615.1966

Fleming-Michael, K. (2007, June 21). Medical screening increases for TBI. Medical

Research Material Command Public Affairs. Retrieved from

[http://dcmilitary.com/stories/062107/standard\\_27944.shtml](http://dcmilitary.com/stories/062107/standard_27944.shtml)

Fleming-Michael, K. (2007). Understanding TBI. *Soldiers*, 62(9), 29.



Frain, M.P., Bethel, M., & Bishop, M. (2010). A roadmap for rehabilitation counselors to serve military veterans with disabilities. *Journal of Rehabilitation*, 76(1), 13-21.

Gearhart, K. (2007). *Understanding helps families, soldiers deal with brain injuries*. Military News. Retrieved from [http://www.blackanthem.com/news/health/understanding\\_helps\\_families-soldiers\\_deal\\_with\\_brain\\_injurys12432](http://www.blackanthem.com/news/health/understanding_helps_families-soldiers_deal_with_brain_injurys12432).

Hoffman, T., Cohen, J., & Mulligan, L. (2010, March). *Electronic Initiatives for Providers*. [Power Point slides]. Retrieved from [http://va.gov/vehu/vehu2010/ppt/176\\_prov.ppt](http://va.gov/vehu/vehu2010/ppt/176_prov.ppt)

Johnson, G. (2010). *Traumatic Brain Injury Survival Guide*. Retrieved from <http://www.tbiguide.com>

Kansas Commission on Veterans Affairs. (2010). *Unseen Injuries: Medical Information for Recent Veterans*. Persian Gulf War Veterans Health Initiative Advisory Board to the Kansas Commission on Veterans Affairs [Brochure]. Topeka, KS: Author. Retrieved from: <http://www.kcva.org/pdf/pgwbroch.pdf>

Leyden, A. (1997). *Gulf War Debriefing Book: An After Action Report*. Grants Pass, OR: Hellgate Press

Milano, F. (2000). Gulf War Syndrome: The agent orange of the nineties. *International Social Science Review*, 75(1), 10-25.

Military. (2008). *Signs of Concussion in 20% of War Vets*. Retrieved from :

<http://www.military.com>

Military One Source. (2007). *Traumatic Brain Injury*. [Brochure] Military One Source:

Retrieved from: [http://www.pdhealth.mil/downloads/tbi\\_ptsd\\_final04232007.pdf](http://www.pdhealth.mil/downloads/tbi_ptsd_final04232007.pdf)

Moore, E. (2007). First Gulf War Health Problems: Autoimmune Disease. Retrieved

from [http://www.autoimmunedisease.suite101.com/article.cfm/firstgulfwarhealth\\_problems](http://www.autoimmunedisease.suite101.com/article.cfm/firstgulfwarhealth_problems).

Moson, C. M. (2009). Military-related PTSD and intimate relationships: From description

to theory-driven research and intervention development. *Clinical Psychology Review*, 29(8), 707-714.

Nass, M. (2003). *Thoughts on treatment of Gulf War Syndrome patients*. Retrieved from

<http://www.anthraxvaccine.com>

National Institute Of Mental Health, Department of Veterans Affairs Office Of Research

And Development, United States Army Medical Research And Material

Command (2006, May 17-18). Mapping the landscape of deployment related adjustment and mental disorders: A meeting summary of a working group to

inform research. Rockville, MD. Retrieved from

<http://research.va.gov/programs/OIF-OEF/deployment-related-adjustment-may06-report.pdf>

National Institute of Neurological Disorders and Stroke. (2008, July 28). *NINDS*

*traumatic brain injury information page*. Retrieved July 28, 2008, from the National

- Institute of Health Website: <http://www.ninds.nih.gov/disorder/tbi/tbi/htm>
- Okie, S. (2005). Traumatic brain injury in the war zone. *New England Journal of Medicine*, 352(20), 2043-2047.
- PTSD Support Services. (2008). *Treatments of PTSD*. Anxiety Disorders Association of America [Brochure]. Woodland Park, CO: Author. Retrieved from: [http://ptsdsupport.net/new\\_ptsd\\_treatments.html](http://ptsdsupport.net/new_ptsd_treatments.html)
- Perrotta, D. (1996, July 1). Long-term Health effects associated with sub-clinical exposure to GB and Mustard: A review conducted by the Environmental Committee Armed Forces Epidemiological Board. Retrieved from <http://gulflink.osd.mil/agent.html>
- Streisand, B. (2006, October 1). Treating war's toll on the mind. *U.S. News & World Report*. Retrieved from [//health.usnews.com/usnews/health/article/061001/9ptsd.htm](http://health.usnews.com/usnews/health/article/061001/9ptsd.htm)
- TBI Resource Packet (2010). Assessment of TBI. Department of Education ed.-0709 retrieved from <http://tn.gov/.../71309TBIpacket.doc>
- United States Department Of Veterans Affair (2007). *National Center For PTSD: Treatment of PTSD* [Brochure]. Washington, DC: Retrieved from [http://www.ptsd.va.gov/public/pages/handouts\\_treatmentptsd.pdf](http://www.ptsd.va.gov/public/pages/handouts_treatmentptsd.pdf)

Vlahos, K. (2007, July 2). Hidden Wounds: More veterans survive Iraq, but the war's signature injury isn't immediately apparent. *The American Conservative*, 1-8. Retrieved from <http://amconmag.com/article/2007/jul/02/00020/>

Walser, R. (2007). Iraq War Clinician Guide: Stress, Trauma, and Alcohol and Drug Use A National Center for PTSD Fact Sheet. Retrieved from: [westga.edu/~vickir/military/fs10military/stressTraumaandAlcoholDrugUse.pdf](http://westga.edu/~vickir/military/fs10military/stressTraumaandAlcoholDrugUse.pdf) pg195.

Walter Reed Army Institute of Research [2005]. *8 Tough facts About Combat and What Soldiers Can Do To Help Themselves and their Buddies* [Brochure]. Silver Springs, MD: Author.

Walter Reed Army Institute of Research (2006). *Battlemind Training II* [Brochure]. Silver Springs, MD: Author.

Walter Reed Army Institute of Research (2006). *10 Tough facts about combat and what leaders can do to mitigate risk and build resilience* [Brochure]. Silver Springs, MD: Author.

Yaso, S. (2007). The PTSD time-bomb. *Mental Health Practice*, 11(2), 1-9.

VITA

Graduate School  
Southern Illinois University

Dianna S. Inman

November 16, 1963

2244 West College Street, Carbondale, Illinois 62901

1040 Anna Nursery Lane, Cobden, Illinois 62920

[DiannaInman@hotmail.com](mailto:DiannaInman@hotmail.com)

Southern Illinois University Carbondale

Bachelor of Arts, Administration of Justice, Dec 1999

Major Professor: Dr. D. Shane Koch