



Post Traumatic Stress Disorder

Discussion Paper prepared for

The Workplace Safety and Insurance Appeals Tribunal

February 2010

Prepared by:

Dr. Diane Whitney MD, FRCPC, BCETS

Assistant Professor

University of Western Ontario & University of Toronto

Dr. Diane Whitney is a staff psychiatrist at the Thunder Bay Regional Health Centre. She continues to focus on her interests including complex mood disorders with co-morbid trauma history, addictions and personality disorders. Dr. Whitney acts as a consultant to a women's program in a residential treatment centre.

Previously, Dr. Whitney was the Clinical Director of the Women's Program at the Centre for Addiction & Mental Health – Clarke Site in Toronto. She was instrumental in developing an inpatient and outpatient program for women with complex mood disorders.

Dr. Whitney is actively involved in medical student, resident and family practice education. Her teaching has focused on complex PTSD, mood disorder, addictions and women's issues etc. Her relocation to Thunder Bay was to focus on teaching through the Northern Ontario Medical School.

Dr. Whitney is Board Certified in Illness Trauma by the American Academy of Experts in Traumatic Stress. She also has experience with combat stress from her experience as a General Duty Medical Officer with the Canadian military during the first Persian Gulf War in 1990/91.

Post Traumatic Stress Disorder

This medical discussion paper will be useful to those seeking general information about the medical issue involved. It is intended to provide a broad and general overview of a medical topic that is frequently considered in Tribunal appeals.

Each medical discussion paper is written by a recognized expert in the field, who has been recommended by the Tribunal's medical counsellors. Each author is asked to present a balanced view of the current medical knowledge on the topic. Discussion papers are not peer reviewed. They are written to be understood by lay individuals.

Discussion papers do not necessarily represent the views of the Tribunal. A vice-chair or panel may consider and rely on the medical information provided in the discussion paper, but the Tribunal is not bound by an opinion expressed in a discussion paper in any particular case. Every Tribunal decision must be based on the facts of the particular appeal. Tribunal adjudicators recognize that it is always open to the parties to an appeal to rely on or to distinguish a medical discussion paper, and to challenge it with alternative evidence : see *Kamara v. Ontario (Workplace Safety and Insurance Appeals Tribunal)* [2009] O.J. No. 2080 (Ont Div Court).

Version 2.0

Background

Trauma has long been associated with psychological symptoms and disability. Various labels have been used for war-related trauma including: irritable heart in US Civil War, Shell Shock in World War I, Battle Fatigue in World War II and Post Traumatic Stress Disorder in the Vietnam War. Since the Vietnam War the diagnosis of Post Traumatic Stress Disorder has been extended to non-war trauma including work place accidents, natural disasters and motor vehicle accidents. In addition, the sequelae of childhood sexual and physical abuse are understood as a form of PTSD that affects personality development, interpersonal relationships and affect regulation (ability to deal with various feelings) extending into adulthood. The recent Iraq War has led to re-examination of previous war related trauma and has led to novel treatment techniques. In particular the role of head injury in PTSD has been re-examined.

Definition of PTSD

Trauma: For PTSD to develop, the person must have suffered or witnessed an event that involved actual or threatened death or serious injury to self or others. According to Diagnostic Statistical Manual IV (DSM IV) of the American Psychiatric Association, the person's response must have included intense fear, helplessness or horror. Thus, there is now a subjective aspect to the trauma with the emphasis being shifted from the severity of the trauma to the person's reaction to the trauma in this version of the DSM. There are likely to be further revisions related to the DSM V.

Symptom Clusters: There are 3 symptom clusters according to DSM IV, which define Post Traumatic Stress Disorder. The clusters are re-experience traumatic event, avoidance & emotional numbing and increased arousal. The symptoms must be present for at least one month and cause significant distress and/or impair functioning.

The traumatic event is **re-experienced** in 1 or more of the following ways:

- Recurrent & intrusive distressing recollections and dreams of the event
- Acting or feeling as if the trauma was reoccurring
- Psychological distress and/or physiological reactivity when exposed to cues that resemble an aspect of the traumatic event

Avoidance of stimuli associated with trauma and a general numbing of responsiveness indicated by 3 or more of the following:

- Avoidance of thoughts, feelings or conversation associated with the trauma
- Avoidance of activities that will arouse recollection of the trauma (places or people)
- Inability to recall an important aspect of event
- Markedly diminished interest in significant activities
- Feelings of detachment

- Restricted range of mood
- Sense of foreshortened future

Symptoms of **increased arousal** as indicated by 2 or more of the following:

- Difficulty falling or staying asleep
- Irritability or outbursts of anger
- Difficulty concentrating
- Hyper-vigilance
- Exaggerated startle response

Subtypes of PTSD: Acute PTSD is defined by symptoms lasting less than 3 months. If symptoms persist more than 3 months then the disorder is identified as chronic. In some situations PTSD symptoms may develop long after the traumatic event and it is classified as delayed onset if symptoms begin 6 months after the event. Unfortunately there is not an accepted time limit between experiencing the trauma and the development of PTSD. In some circumstances PTSD develops decades after the initial trauma and may be triggered by a reminder of the trauma (i.e. World War II veterans developing PTSD 30 years later) or after experiencing another trauma (i.e. early childhood trauma with no apparent PTSD and subsequent development of PTSD following sexual harassment as an adult).

Acute Stress Disorder

Until Diagnostic Statistical Manual IV (DSM IV) there had been no diagnostic entity or clinical term for trauma symptoms that occur immediately after the trauma. In military settings the term Combat Stress Reaction was used for acute trauma related to war activities but it had no equivalent term in the civilian psychiatric literature until recently. Acute Stress Disorder (ASD) emerged with the publication of the DSM IV. In Acute Stress Disorder the symptoms onset and resolve within 4 weeks of the traumatic event. If the symptoms persist beyond 4 weeks then the diagnosis becomes PTSD. At this time, Acute Stress Disorder has not been well studied but further investigations may help us understand who goes on to develop PTSD and what are the appropriate interventions for ASD to reduce the risk of developing PTSD. Critical Incident Stress Debriefing has been offered after a significant trauma in various environments but the benefit of this intervention is controversial and some studies suggest that it may be harmful in some circumstances. More recent evidence from Roberts and colleagues (2009) that summarizes a meta analysis recommends that no psychological intervention can be recommended for routine use following traumatic events. Multiple session interventions, like single session interventions may have an adverse effect on some individuals. At this time there are no recommended interventions for acute trauma.

Epidemiology – How Common is it?

The lifetime rates for PTSD in the general population in the USA are estimated to be 8% based on several epidemiological studies (Kessler 1995). There is a gender difference with 5% of men and

10% of women experiencing PTSD in their lifetime. There is limited Canadian data with one study showing a 1-month prevalence of 2.7% in women and 1.2% in men (Stein 1997). Approximately 40-60% of patients with PTSD have symptoms that become chronic i.e. last longer than 6 months. In addition, co-morbidity, i.e. other disorders being present with PTSD, is very common. Up to 80% of patients with PTSD also experience other disorders, such as major depression, anxiety, substance abuse.

Development of PTSD

In considering the development of PTSD, features of the trauma as well as the characteristics of the individual need to be carefully considered.

The Trauma: The lifetime prevalence of exposure to traumatic events in the general population is high. In Canada it is estimated that 74% of women and 81% of men have been exposed to an event that could cause PTSD. The risk of developing PTSD given exposure to trauma (conditional risk) is estimated to be 10-25%. The types of traumas experienced by each gender have some unique features with women frequently experiencing interpersonal trauma such as rape and childhood sexual assault while men frequently experience physical violence, accidents and witnessed violence. Even though men have a higher prevalence of exposure to traumatic events, women are more likely to develop PTSD even when the type of trauma is controlled. PTSD is also more likely to develop with interpersonal violence such as assault or rape than natural disasters.

The trauma sources for developing PTSD identified in the Detroit Area Survey of Trauma (Breslau 1998) are 39% violent assault, 31% unexpected death of loved one, 22% other shock or injury and 7% learning about trauma.

The Individual: The most significant personality trait, which accounts for the majority of the variance in developing PTSD, is Neuroticism or Negative Affectivity. This is a temperamental style where the person tends to respond easily to events with anxiety and depression (Bowman 1999). Another important factor is locus of control i.e. where the person believes the control or responsibility for an event lies. If there is a mismatch between the individual's belief about where the control should reside and where it actually resides then PTSD is more likely to develop (i.e. if the person believes that they should have control but they don't). A history of previous trauma significantly increases the risk of developing PTSD. Multiple traumas are common and the risk of PTSD increases exponentially with multiple traumas or lifetime adversities (Paris 2000). It is important to acknowledge that there are protective factors for PTSD related to complex beliefs about the self, religious faith, political commitment and self-efficacy.

Some authors (Bowman 1999) argue that individual differences (i.e. vulnerabilities) are more important than event characteristics in the development of PTSD. In DSM IV, the event has to involve actual or threatened death or serious injury to self or other and the person's reaction must have included intense fear, helplessness or horror. This begins to shift the focus of causation away from the characteristics of the trauma towards the individual who is vulnerable and at risk. However it is controversial in the scientific literature whether the individual factors are more relevant than the trauma. It is important to be cautious that the victim is not blamed for developing PTSD related to risk factors and vulnerabilities.

At the present time, there is no consensus whether personal vulnerability or trauma characteristics are more important in the development of PTSD. It is best to conceptualize the development of PTSD as an interaction between the individual with vulnerabilities and risk factors and the trauma including the type, characteristics, and meaning.

Risk Factors for Development of PTSD

Risk factor must be considered along a continuum including pre- trauma, peri-trauma (at the time of the trauma) and post-trauma.

Pre-Trauma: There have been studies that suggest a genetic contribution to PTSD onset. Using a registry of Vietnam era twins, one study by Xian et al 2000 suggested that 35.5% of the variance in PTSD might be attributed to genetic factors. Some of this variance may be shared with genetic factors common to drug and alcohol dependence but 20% of the variance in PTSD was due to genetic factors unique to PTSD.

The most consistent pre-trauma risk factors include female gender, past psychiatric history, reported childhood abuse and family psychiatric history. It should be noted that these factors are more predictive of PTSD in some populations i.e. combat vs. civilian PTSD populations.

Peri-Trauma: The predictive value of peri-trauma factors varies by trauma type. For instance, trauma severity is a stronger predictor when the trauma involves combat. Traumas due to deliberate human malice (versus natural or accidental traumas) may be a stronger predictor of PTSD and reduce recovery from PTSD (Brewin et al 2000). Peri-trauma dissociation (emotional disconnection or “zoning out”) is predictive of PTSD diagnosis lasting over 6 months in duration, and has been associated with approximately 30% of the variance in PTSD symptom intensity.

Post-Trauma: Lack of social support is the primary post-trauma risk factor for developing PTSD. Severity of acute symptoms is predictive of development of PTSD. However, PTSD can develop when no acute symptoms were present (Yehuda 1998). Early research suggests that acute posttraumatic symptoms of increased heart rate and startle response are predictive of developing PTSD.

PTSD Trajectory over Time

The majority of patients who develop PTSD do recover over time. For example, a longitudinal study by Shalev & Yehuda 1999 showed that 58% recovered by 9 months. However, a significant number estimated to be 15-25% fail to recover for years. On average, the clinical progression of PTSD occurs over a twenty-year span with the patient experiencing an average of 3.3 episodes, which are each seven years in length (Greenberg 1999).

Solomon (2006) has a unique study that followed Israeli soldiers over 20 years following the 1982 Lebanon War. 214 veterans from the Lebanon War were assessed in a perspective longitudinal design. 131 suffered from combat stress reaction during the war and 83 did not. Evaluations were conducted at 1, 2, 3 and 20 years. Results revealed that both groups had overwhelming more enduring post traumatic symptoms among combat stress reaction casualties than among veterans

without combat stress. Over time the number of symptoms dropped in the 3rd year and rose again 17 years later. The author presents that combat stress reaction is not a minor psychological wound. The individual loses his sense of safety and mastery, and experiences vulnerability and existential helplessness.

Assessment Tools

There are a variety of structured interviews and self-report measures available for PTSD. These measures tend to be used by programs and clinicians specialized in providing trauma services. Most individual clinicians rely on the clinical interview to make the diagnosis. The CAPS (Clinician Administered PTSD Scale) is commonly used and it provides information on diagnosis and symptom level. It is most likely to be administered in a specialty trauma clinic. The IES (Impact of Events Scales by Horowitz) is widely used, but it fails to include the hyper-arousal symptom cluster. Other scales are used to measure symptom frequency and severity. The Davidson Trauma Scale is a 17 item self-report measure of PTSD, and therefore requires less time to administer. It measures severity & frequency of all 3 DSM IV symptom clusters and tends to be sensitive to treatment response effects. Standardized assessments tools can assist with the diagnosis as well as monitor the effectiveness of treatment over time. The challenge is incorporating such tools into usual clinical practice.

New Findings in PTSD

Relevant findings of brain structural abnormalities reveal significant smaller hippocampus (involved in memory processing) in persons with PTSD and smaller left amygdala volumes (involved in emotional processing centre). In a 2009 study by Nardo, 43 work related trauma victims were examined by neurological imaging (Voxel-Based Morphometry). Those experiencing PTSD were noted to have lower brain density particularly in the limbic and paralimbic cortex. The authors concluded that PTSD was characterized by memory and dissociative disturbances.

Diagnosis

The most common diagnostic error associated with PTSD is clinician failure to elicit the information about trauma history (Davidson 1999). Often, distinguishing PTSD from other disorders is difficult, as it shares many symptoms with other psychiatric conditions. As well, the high incidence of co-morbidity (other disorders being present) also complicates diagnosis as the patient may present complaining of depressive or anxiety symptoms.

Those with a trauma history are more likely to present to their family physician than to mental health services. There is a need to screen for PTSD in patients with: sleep complaints, somatization (multiple physical symptoms), co-morbidity with anxiety or depressive disorders, alcohol or chemical use, suicidal ideation, and high rate of medical service consumption.

There may be a delay in the onset of PTSD. If symptoms onset is more than six months after the trauma, then PTSD is classified as delayed-onset. At times PTSD symptoms may develop years later. This often occurs in the context of another trauma or a significant reminder of the original trauma. For example a police officer may witness a very severe accident that reminds

him of previous motor vehicle accidents or a woman with childhood abuse may experience trauma symptoms when she encounters the abuser as an adult.

Misdiagnosis may occur with PTSD. Flashbacks may be misinterpreted as hallucinations and the hyper-vigilance may be seen as paranoia. Numbing may be misinterpreted as depression, and hyper-arousal as anxiety or mood disorder. Avoidance behaviour may be identified as the schizoid or avoidant personality disorder.

Differential Diagnosis

The challenge with the diagnosis of PTSD is eliciting the trauma history as well as distinguishing PTSD from the co-morbid conditions. Kessler's co-morbidity study (1995) showed that 79% of women and 88% of men with lifetime diagnosis PTSD met the criteria for at least one other lifetime psychiatric disorder. The most common co-morbid conditions are major depression, other anxiety disorders and alcohol abuse/dependence.

For those who are physically injured, there may be a delay in the recognition and treatment of PTSD. PTSD symptoms may be misinterpreted as physical symptoms. In one study of injured workers with chronic pain on disability, 34% reported symptoms consistent with PTSD while 18% reported symptoms consistent with partial PTSD (Asmundson 1998).

Malingering must be considered in the differential diagnosis particularly with workplace accidents, motor vehicle accidents or military persons if compensation is an issue. Malingering should be considered if a patient is particularly eager to discuss the trauma as most patients with genuine PTSD avoid discussion of such traumatic events.

Treatment

Treatment of PTSD involves psychosocial and pharmacological interventions. The current standard of PTSD treatment is a sequenced model as proposed by Courtois, Chu and others. These authors emphasize the importance of titration and pacing in therapeutic work, as well as working in stages (early, middle and late). Trauma victims must develop fundamental skills related to self-care. Symptoms such as flashbacks, nightmares and depression must be under control before exploring the trauma extensively. The therapeutic relationship must be developed so that the patient can disclose trauma history in a safe manner that is not re-traumatizing or destabilizing for the patient. The co-morbidity and severity of the PTSD illness must be taken into account with treatment planning. Co-morbid conditions such as substance abuse and depression may also require specific treatment and these may need to occur prior to trauma treatment. Recently, treatment guidelines for PTSD have been compiled/developed including the Expert Consensus (Journal of Clinical Psychiatry) and the International Society of Traumatic Stress (ISTSS) Guidelines. These guidelines have not been disseminated too widely in Canada and thus only those practitioners specializing in trauma would be familiar with them.

Psychological Treatments

Psychoeducation about PTSD is an early intervention that can be provided to trauma victims and their families. Victims need to be educated about common symptoms of PTSD including cognitive, behavioural, affective symptoms as well as any changes in their core beliefs i.e. the world is not a safe place. Cognitive Behavioural Therapy (CBT) has been found to be the most effective treatment for PTSD. Irrational beliefs about guilt and safety can be confronted and modified. Exposure therapy has been found to be particularly effective with improvement seen in 60-70% of patients (Foa 2000). The victim constructs a hierarchy of feared situations. The person is gradually exposed to their feared situation while using the relaxation techniques to control anxiety. EMDR (Eye Movement Desensitization Reprocessing) is a controversial treatment developed by Dr. Francine Shapiro for PTSD treatment. It promises relatively rapid improvement in symptoms. The technique involves bilateral stimulation of the brain through eye movements or sounds to reprocess memories. There are associated imagery and cognitive components as well. Further research should clarify the role and effectiveness of EMDR.

Psychological debriefing which is a psycho-educational and supportive session provided within 24-48 hours of the trauma had been widely used. The purpose was to normalize the reaction to the trauma and encourage use of appropriate coping skills. However, recent literature has questioned the effectiveness of this intervention and some studies suggest that it may actually be harmful for some people, i.e. make people more likely to develop PTSD. At this time group debriefing following a traumatic event would not be recommended.

Pharmacological Treatment

The specific serotonin reuptake inhibitors (SSRIs) fluoxetine (Prozac), paroxetine (Paxil), and sertraline (Zoloft) have been most extensively investigated, and found to result in a reduction of symptoms in all 3 clusters in 40-85% of subjects. These agents have the least impact on the avoidance symptom cluster. Paroxetine (Paxil) is the only SSRI medication in Canada to have the formal indication for treating PTSD. Studies have shown improvement in symptoms in 5-6 weeks with either 20 or 40 mg/day of Paroxetine. In the USA Sertraline (Zoloft) is only SSRI that had received FDA approval for treating PTSD. Other SSRIs including fluoxetine, fluvoxamine, citalopram and nefazodone, have open studies demonstrating effectiveness in various trauma populations. It is important to note the population used in the study, i.e. combat, civilian interpersonal trauma vs. natural disaster. There is preliminary evidence of effectiveness with dual acting agents (noradrenaline and serotonin) such as venlafaxine and mirtazapine.

Other classes of medication have also been used to treat PTSD. Mood stabilizers including carbamazepine and valproate have been used with some reduction in re-experiencing and arousal symptoms. Newer mood stabilizers including topiramate are showing some promising results particularly for disrupted sleep. The traditional mood stabilizers have been used when someone is labile, impulsive or aggressive. The atypical antipsychotics have demonstrated some benefit for sleep and dissociation as well as hyper-vigilance to the point of being paranoid. For hyper-arousal, clonidine and propranolol are sometimes used.

Long Term Outcomes and Economic Costs

The most adverse outcomes are associated with traumas that occurred in childhood, particularly when it is repetitive. In the National Co-morbidity Survey, PTSD was associated with 40% elevated odds of high school & college failure, 150% elevated odds of unemployment during an episode and 60% elevated odds of marital instability. Given the co morbidity of trauma, recovery is impaired by multiple traumas as well as multiple additional diagnoses.

There is an associated mortality with PTSD. PTSD patients are 6 times more likely to attempt suicide compared to controls, and PTSD results in more suicide attempts than in all other anxiety disorders.

PTSD results in an average work loss of 3.6 days/month with an annual productivity loss of \$3 billion in the USA. The level of productivity loss per case is similar to levels found with depression.

Conclusion and Final Comment

Post traumatic stress disorder is a chronic mental illness that can develop after exposure to a life event that threatens death or serious injury. Initially, the focus for the development of PTSD was on the trauma, particularly attempting to characterise the severity and nature of the trauma leading to PTSD. However, large studies have shown the relative risk of developing PTSD is 10-25% after being exposed to a traumatic event. This has lead researchers to focus on vulnerabilities and risk factors in those being exposed, i.e. the victim. The most consistent pre-trauma risk factors have been shown to be female gender, reported childhood abuse and family psychiatric history. Other relevant factors related to the development of PTSD include dissociation at the time of the trauma, severity of the trauma (in combat) and perceived support after the event.

The most significant issue for the Workplace Safety & Insurance Appeals Tribunal is determining the significance of any workplace trauma and any resulting symptoms. The impact of earlier traumas must be considered and attribution to the current presentation. The issue of co-morbidity is also key – people with a worse prognosis tend to have more psychiatric disorders. It is the Panel or Vice-Chair's responsibility to determine the complex picture of the trauma (workplace, past traumas) and how impaired that the person is due to their work trauma. This can be achieved by education regarding trauma, reviewing case files and working collaboratively to provide consistent decisions.

PTSD References:

Asmundson GJ, Norton GR, Allardings MD, Norton PJ, Larsen DK. (1998) Posttraumatic stress disorder and work-related injury. *J Anxiety Disord* 12(1):57-69.

Bowman ML. (1999) Individual differences in posttraumatic distress: problems with the DSM IV model. *Can J Psychiatry* 44(1):21-33.

Breslau N, Kessler RC, Chilcoat HD, Schultz LR, Davis GC, Andreski P. (1998) Trauma and posttraumatic stress disorder in the community: the 1996 Detroit Area Survey of Trauma. *Arch Gen Psychiatry* 55:626-632.

- Brewin CR, Andrews B, Valentine JD. (2000) Meta-analysis of risk factors for posttraumatic stress disorder in trauma-exposed adults. *J Clin & Consult Psychology* 68 (5):748-66.
- Courtois CA. (1999) *Recollection of Sexual Abuse-Treatment Principles and Guidelines*. New York: Norton
- Chu JA. (1998) *Rebuilding Shattered Lives-The Responsible Treatment of Complex Post-Traumatic and Dissociative Disorders*. New York: John Wiley.
- Foa EB. (2000) Psychosocial treatment of posttraumatic stress disorder. *J Clin Psychiatry* 61: suppl 5:43-8..
- Friedman MJ. (2000) *Post Traumatic Stress Disorder-The Latest Assessment and Treatment Strategies*. Kansas City: Compact Clinicals.
- Greenberg PE, Sisitksy T, Kessler RC, Finkelstein SN, Berndt ER, Davidson JR, Ballenger JC, Fyer AJ. (1999) *J Clin Psychiatry* 60(7) 427-35.
- Kessler RC, Sonnega A, Bromet E, Hughes M, Nelson CB. (1995) *Arch Gen Psychiatry* 52 (12):1048-60.
- Meichenbaum D. (1994) *A Clinical Handbook/Practical Therapist Manual for Assessing and Treating Adults with Post-Traumatic Stress Disorder (PTSD)*. Waterloo: Institute Press.
- Nardoo D, Hogberg G, Looi JC, Larsson S, Hallstrom T & Pagani M. Gray matter density in limbic and paralimbic cortices is associated with trauma load and EMDR outcome in PTSD. (2009) *J Psychiatr Res*: Epub ahead of print.
- Paris J. (2000) Predispositions, personality traits, and posttraumatic stress disorder. *Harv Rev Psychiatry* 8(4):175-83.
- Roberts NP, Kitchiner NJ, Kenardy J, Bisson J.(2009) Multiple session early psychological interventions for the prevention of post-traumatic stress disorder. *Cochrane Database Syst Rev* July 8;(3): CD006869.
- Rosenblum D, William M, Watkins BE. (1999) *Life after Trauma-A Workbook for Healing*. New York: Guilford Press.
- Stein MB, Walker JR, Hazen AL, Forde DR. (1997) Full and partial posttraumatic stress disorder: findings from a community survey. *Am J Psychiatry* 154(8):1114-9.
- Solomon Z, Mikulincer m. (2006) Trajectories of PTSD: A 20-Year Longitudinal Study. *Am J Psychiatry* 2006: 163:659-666.
- Yehuda R, McFarlane AC, Shalev AY. (1998) Predicting the development of posttraumatic stress disorder from the acute response to a traumatic event. *Biol Psychiatry* 44(12): 1305-13.