Information on Posttraumatic Stress Disorder – PTSD

Information in this section was taken from the Department of Veterans Affairs “National Center for PTSD” website.

DSM Criteria for PTSD

Criterion A: stressor

The person has been exposed to a traumatic event in which both of the following have been present:

1. The person has experienced, witnessed, or been confronted with an event or events that involve actual or threatened death or serious injury, or a threat to the physical integrity of oneself or others.
2. The person's response involved intense fear, helplessness, or horror. Note: in children, it may be expressed instead by disorganized or agitated behavior.

Criterion B: intrusive recollection

The traumatic event is persistently re-experienced in at least one of the following ways:

1. Recurrent and intrusive distressing recollections of the event, including images, thoughts, or perceptions. Note: in young children, repetitive play may occur in which themes or aspects of the trauma are expressed.
2. Recurrent distressing dreams of the event. Note: in children, there may be frightening dreams without recognizable content
3. Acting or feeling as if the traumatic event were recurring (includes a sense of reliving the experience, illusions, hallucinations, and dissociative flashback episodes, including those that occur upon awakening or when intoxicated). Note: in children, trauma-specific reenactment may occur.
4. Intense psychological distress at exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event.
5. Physiologic reactivity upon exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event

Criterion C: avoidant/numbing

Persistent avoidance of stimuli associated with the trauma and numbing of general responsiveness (not present before the trauma), as indicated by at least three of the following:

1. Efforts to avoid thoughts, feelings, or conversations associated with the trauma
2. Efforts to avoid activities, places, or people that arouse recollections of the trauma
3. Inability to recall an important aspect of the trauma
4. Markedly diminished interest or participation in significant activities
5. Feeling of detachment or estrangement from others
6. Restricted range of affect (e.g., unable to have loving feelings)
7. Sense of foreshortened future (e.g., does not expect to have a career, marriage, children, or a normal life span)

**Criterion D: hyper-arousal**

Persistent symptoms of increasing arousal (not present before the trauma), indicated by at least two of the following:

1. Difficulty falling or staying asleep
2. Irritability or outbursts of anger
3. Difficulty concentrating
4. Hyper-vigilance
5. Exaggerated startle response

**Criterion E: duration**

Duration of the disturbance (symptoms in B, C, and D) is more than one month.

**Criterion F: functional significance**

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

**Specify if:**

Acute: if duration of symptoms is less than three months

Chronic: if duration of symptoms is three months or more

**Specify if:**

With or Without delay onset: Onset of symptoms at least six months after the stressor

**References**

New Diagnostic Criteria for PTSD to Be Released: DSM-5

The Diagnostic and Statistical Manual of Mental Disorders provides standard criteria and common language for the classification of mental disorders. It is published by the American Psychiatric Association. The fifth revision (DSM-5) is scheduled to release in May 2013: This will include changes to the diagnostic criteria for PTSD and Acute Stress Disorder.

The reason the PTSD criteria are being revised is to take into account the things we have learned from scientific research and clinical experience.

What can we tell you now about those revisions?

- Based on the proposed DSM-5 criteria, the prevalence of PTSD will be similar to what it is currently in DSM-IV.
- Symptoms are mostly the same. The 3 clusters of DSM-IV symptoms will be divided into 4 clusters in DSM-5: intrusion symptoms, avoidance symptoms, arousal/reactivity symptoms and negative mood and cognitions. It is proposed that a few symptoms will be added and some revised.
- Criterion A2 (requiring fear, helplessness or horror happen right after the trauma) will be removed.
- The diagnosis is proposed to move from the class of anxiety disorders into a new class of "trauma and stressor-related disorders."
- PTSD assessment measures, such as the CAPS and the PCL, are being revised by the National Center for PTSD to be made available upon the release of DSM-5.
PTSD History and Overview

Matthew J. Friedman, MD, PhD

A brief history of the PTSD diagnosis

The risk of exposure to trauma has been a part of the human condition since we evolved as a species. Attacks by saber tooth tigers or twenty-first century terrorists have probably produced similar psychological sequelae in the survivors of such violence. Shakespeare's Henry IV appears to meet many, if not all, of the diagnostic criteria for Posttraumatic Stress Disorder (PTSD), as have other heroes and heroines throughout the world's literature. The history of the development of the PTSD concept is described by Trimble (1).

In 1980, the American Psychiatric Association added PTSD to the third edition of its Diagnostic and Statistical Manual of Mental Disorders (DSM-III) nosologic classification scheme. Although controversial when first introduced, the PTSD diagnosis has filled an important gap in psychiatric theory and practice. From an historical perspective, the significant change ushered in by the PTSD concept was the stipulation that the etiological agent was outside the individual (i.e., a traumatic event) rather than an inherent individual weakness (i.e., a traumatic neurosis). The key to understanding the scientific basis and clinical expression of PTSD is the concept of "trauma."

In its initial DSM-III formulation, a traumatic event was conceptualized as a catastrophic stressor that was outside the range of usual human experience. The framers of the original PTSD diagnosis had in mind events such as war, torture, rape, the Nazi Holocaust, the atomic bombings of Hiroshima and Nagasaki, natural disasters (such as earthquakes, hurricanes, and volcano eruptions), and human-made disasters (such as factory explosions, airplane crashes, and automobile accidents). They considered traumatic events to be clearly different from the very painful stressors that constitute the normal vicissitudes of life such as divorce, failure, rejection, serious illness, financial reverses, and the like. (By this logic, adverse psychological responses to such "ordinary stressors" would, in DSM-III terms, be characterized as Adjustment Disorders rather than PTSD.) This dichotomization between traumatic and other stressors was based on the assumption that, although most individuals have the ability to cope with ordinary stress, their adaptive capacities are likely to be overwhelmed when confronted by a traumatic stressor.

PTSD is unique among psychiatric diagnoses because of the great importance placed upon the etiological agent, the traumatic stressor. In fact, one cannot make a PTSD diagnosis unless the patient has actually met the "stressor criterion," which means that he or she has been exposed to an historical event that is considered traumatic. Clinical experience with the PTSD diagnosis has shown, however, that there are individual differences regarding the capacity to cope with catastrophic stress. Therefore, while some people exposed to traumatic events do not develop PTSD, others go on to develop the full-blown syndrome. Such observations have prompted the recognition that trauma, like pain, is not an external phenomenon that can be completely objectified. Like pain, the traumatic experience is filtered through cognitive and emotional processes before it can be appraised as an extreme threat. Because of individual differences in
this appraisal process, different people appear to have different trauma thresholds, some more protected from and some more vulnerable to developing clinical symptoms after exposure to extremely stressful situations. Although there is currently a renewed interest in subjective aspects of traumatic exposure, it must be emphasized that events such as rape, torture, genocide, and severe war zone stress are experienced as traumatic events by nearly everyone.

The DSM-III diagnostic criteria for PTSD were revised in DSM-III-R (1987), DSM-IV (1994), and DSM-IV-TR (2000). A very similar syndrome is classified in ICD-10 (The ICD-10 Classification of Mental and Behavioural Disorders: Clinical Descriptions and Diagnostic Guidelines). Diagnostic criteria for PTSD include a history of exposure to a traumatic event and symptoms from each of three symptom clusters: intrusive recollections, avoidant/numbing symptoms, and hyper-arousal symptoms. A fifth criterion concerns duration of symptoms. One important finding, which was not apparent when PTSD was first proposed as a diagnosis in 1980, is that it is relatively common. Recent data from the National Comorbidity Survey indicates PTSD prevalence rates are 5% and 10% respectively among American men and women (2). Rates of PTSD are much higher in postconflict settings such as Algeria (37%), Cambodia (28%), Ethiopia (16%), and Gaza (18%) (3).

**Criteria for a PTSD diagnosis**

As noted above, the "A" stressor criterion specifies that a person has been exposed to a catastrophic event involving actual or threatened death or injury, or a threat to the physical integrity of him/herself or others. During this traumatic exposure, the survivor's subjective response was marked by intense fear, helplessness, or horror.

The "B", or intrusive recollection, criterion includes symptoms that are perhaps the most distinctive and readily identifiable symptoms of PTSD. For individuals with PTSD, the traumatic event remains, sometimes for decades or a lifetime, a dominating psychological experience that retains its power to evoke panic, terror, dread, grief, or despair. These emotions manifest in daytime fantasies, traumatic nightmares, and psychotic reenactments known as PTSD flashbacks. Furthermore, trauma-related stimuli that trigger recollections of the original event have the power to evoke mental images, emotional responses, and psychological reactions associated with the trauma. Researchers can use this phenomenon to reproduce PTSD symptoms in the laboratory by exposing affected individuals to auditory or visual trauma-related stimuli (4).

The "C", or avoidant/numbing, criterion consists of symptoms that reflect behavioral, cognitive, or emotional strategies PTSD patients use in an attempt to reduce the likelihood that they will expose themselves to trauma-related stimuli. PTSD patients also use these strategies in an attempt to minimize the intensity of their psychological response if they are exposed to such stimuli. Behavioral strategies include avoiding any situation in which they perceive a risk of confronting trauma-related stimuli. In its extreme manifestation, avoidant behavior may superficially resemble agoraphobia because the PTSD individual is afraid to leave the house for fear of confronting reminders of the traumatic event(s). Dissociation and psychogenic amnesia are included among the avoidant/numbing symptoms and involve the individuals cutting off the conscious experience of trauma-based memories and feelings. Finally, since individuals with PTSD cannot tolerate strong emotions, especially those associated with the traumatic experience,
they separate the cognitive from the emotional aspects of psychological experience and perceive only the former. Such "psychic numbing" is an emotional anesthesia that makes it extremely difficult for people with PTSD to participate in meaningful interpersonal relationships.

Symptoms included in the "D", or hyper-arousal, criterion most closely resemble those seen in panic and generalized anxiety disorders. While symptoms such as insomnia and irritability are generic anxiety symptoms, hyper-vigilance and startle are more characteristic of PTSD. The hyper-vigilance in PTSD may sometimes become so intense as to appear like frank paranoia. The startle response has a unique neurobiological substrate and may actually be the most pathognomonic PTSD symptom.

The "E", or duration, criterion specifies how long symptoms must persist in order to qualify for the (chronic or delayed) PTSD diagnosis. In DSM-III, the mandatory duration was six months. In DSM-III-R, the duration was shortened to one month, which it has remained.

The "F", or functional significance, criterion specifies that the survivor must experience significant social, occupational, or other distress as a result of these symptoms.

**Assessing PTSD**

Since 1980, there has been a great deal of attention devoted to the development of instruments for assessing PTSD. Keane and associates (4), working with Vietnam war-zone Veterans, have developed both psychometric and psychophysioologic assessment techniques that have proven to be both valid and reliable. Other investigators have modified such assessment instruments and used them with natural disaster survivors, rape/incest survivors, and other traumatized individuals. These assessment techniques have been used in the epidemiological studies mentioned above and in other research protocols.

Neurobiological research indicates that PTSD may be associated with stable neurobiological alterations in both the central and autonomic nervous systems. Psychophysiological alterations associated with PTSD include hyper-arousal of the sympathetic nervous system, increased sensitivity and augmentation of the acoustic-startle eye blink reflex, and sleep abnormalities. Neuropharmacologic and neuroendocrine abnormalities have been detected in most brain mechanisms that have evolved for coping, adaptation, and preservation of the species. These include the noradrenergic, hypothalamic-pituitary-adrenocortical, serotonergic, glutamatergic, thyroid, endogenous opioid, and other systems. Structural brain imaging suggests reduced volume of the hippocampus and anterior cingulated. Functional brain imaging suggests excessive amygdala activity and reduced activation of the prefrontal cortex. This information is reviewed extensively elsewhere (5).

Longitudinal research has shown that PTSD can become a chronic psychiatric disorder and can persist for decades and sometimes for a lifetime. Patients with chronic PTSD often exhibit a longitudinal course marked by remissions and relapses. There is also a delayed variant of PTSD in which individuals exposed to a traumatic event do not exhibit the PTSD syndrome until months or years afterward. Usually, the immediate precipitant is a situation that resembles the
original trauma in a significant way (for example, a war Veteran whose child is deployed to a
war zone or a rape survivor who is sexually harasses or assaulted years later).

If an individual meets diagnostic criteria for PTSD, it is likely that he or she will meet DSM-IV-TR criteria for one or more additional diagnoses (6-7). Most often, these comorbid diagnoses include major affective disorders, dysthymia, alcohol or substance abuse disorders, anxiety disorders, or personality disorders. There is a legitimate question whether the high rate of diagnostic comorbidity seen with PTSD is an artifact of our current decision-making rules for the PTSD diagnosis since there are not exclusionary criteria in DSM-III-R. In any case, high rates of comorbidity complicate treatment decisions concerning patients with PTSD since the clinician must decide whether to treat the comorbid disorders concurrently or sequentially.

Although PTSD continues to be classified as an Anxiety Disorder, areas of disagreement about its nosology and phenomenology remain. Questions about the syndrome itself include: what is the clinical course of untreated PTSD; are there different subtypes of PTSD; what is the distinction between traumatic simple phobia and PTSD; and what is the clinical phenomenology of prolonged and repeated trauma? With regard to the latter, Herman (8) has argued that the current PTSD formulation fails to characterize the major symptoms of PTSD commonly seen in victims of prolonged, repeated interpersonal violence such as domestic or sexual abuse and political torture. She has proposed an alternative diagnostic formulation that emphasizes multiple symptoms, excessive somatization, dissociation, changes in affect, pathological changes in relationships, and pathological changes in identity.

PTSD has also been criticized from the perspective of cross-cultural psychology and medical anthropology, especially with respect to refugees, asylum seekers, and political torture victims from non-Western regions. Clinicians and researchers working with such survivors argue that since PTSD has usually been diagnosed by clinicians from Western industrialized nations working with patients from a similar background, the diagnosis does not accurately reflect the clinical picture of traumatized individuals from non-Western traditional societies and cultures. Major gaps remain in our understanding of the effects of ethnicity and culture on the clinical phenomenology of posttraumatic syndromes. We have only just begun to apply vigorous ethnocultural research strategies to delineate possible differences between Western and non-Western societies regarding the psychological impact of traumatic exposure and the clinical manifestations of such exposure (9).

**Treatment for PTSD**

The many therapeutic approaches offered to PTSD patients are presented in Foa, Keane, Friedman and Cohen's (10) comprehensive book on treatment. The most successful interventions are cognitive-behavioral therapy (CBT) and medication. Excellent results have been obtained with some CBT combinations of exposure therapy and cognitive restructuring, especially with female victims of childhood or adult sexual trauma. Sertraline (Zoloft) and paroxetine (Paxil) are selective serotonin reuptake inhibitors (SSRI) that are the first medications to have received FDA approval as indicated treatments for PTSD. Success has also been reported with Eye Movement Desensitization and Reprocessing (EMDR), although rigorous scientific data are lacking and it is unclear whether this approach is as effective as CBT.
A frequent therapeutic option for mildly to moderately affected PTSD patients is group therapy, although empirical support for this is sparse. In such a setting, the PTSD patient can discuss traumatic memories, PTSD symptoms, and functional deficits with others who have had similar experiences. This approach has been most successful with war Veterans, rape/incest victims, and natural disaster survivors. It is important that therapeutic goals be realistic because, in some cases, PTSD is a chronic and severely debilitating psychiatric disorder that is refractory to current available treatments. The hope remains, however, that our growing knowledge about PTSD will enable us to design interventions that are more effective for all patients afflicted with this disorder.

There is great interest in rapid interventions for acutely traumatized individuals, especially with respect to civilian disasters, military deployments, and emergency personnel (medical personnel, police, and firefighters). This has become a major policy and public health issue since the massive traumatization caused by the September 11 terrorist attacks on the World Trade Center, Hurricane Katrina, the Asian tsunami, the Haitian earthquake, and the current wars in Iraq and Afghanistan. Currently, there is controversy about which interventions work best during the immediate aftermath of a trauma. Research on critical incident stress debriefing (CISD), an intervention used widely, has brought disappointing results with respect to its efficacy to attenuate posttraumatic distress or to forestall the later development of PTSD. The National Center for PTSD and the National Center for Child Traumatic Stress have developed an alternative early intervention, Psychological First Aid, that is available online. Promising results have also been shown with brief cognitive-behavioral therapy.

References

Complex PTSD

Many traumatic events (e.g., car accidents, natural disasters, etc.) are of time-limited duration. However, in some cases people experience chronic trauma that continues or repeats for months or years at a time. The current PTSD diagnosis often does not fully capture the severe psychological harm that occurs with prolonged, repeated trauma. People who experience chronic trauma often report additional symptoms alongside formal PTSD symptoms, such as changes in their self-concept and the way they adapt to stressful events.

Dr. Judith Herman of Harvard University suggests that a new diagnosis, Complex PTSD, is needed to describe the symptoms of long-term trauma (1). Another name sometimes used to describe the cluster of symptoms referred to as Complex PTSD is Disorders of Extreme Stress Not Otherwise Specified (DESNOS)(2). A work group has also proposed a diagnosis of Developmental Trauma Disorder (DTD) for children and adolescents who experience chronic traumatic events (3).

Because results from the DSM-IV Field Trials indicated that 92% of individuals with Complex PTSD/DESNOS also met diagnostic criteria for PTSD, Complex PTSD was not added as a separate diagnosis classification (4). However, cases that involve prolonged, repeated trauma may indicate a need for special treatment considerations.

What types of trauma are associated with Complex PTSD?

During long-term traumas, the victim is generally held in a state of captivity, physically or emotionally, according to Dr. Herman (1). In these situations the victim is under the control of the perpetrator and unable to get away from the danger.

Examples of such traumatic situations include:

- Concentration camps
- Prisoner of War camps
- Prostitution brothels
- Long-term domestic violence
- Long-term child physical abuse
- Long-term child sexual abuse
- Organized child exploitation rings

What additional symptoms are seen in Complex PTSD?

An individual who experienced a prolonged period (months to years) of chronic victimization and total control by another may also experience the following difficulties:

- Emotional Regulation. May include persistent sadness, suicidal thoughts, explosive anger, or inhibited anger.
- Consciousness. Includes forgetting traumatic events, reliving traumatic events, or having episodes in which one feels detached from one's mental processes or body (dissociation).
- Self-Perception. May include helplessness, shame, guilt, stigma, and a sense of being completely different from other human beings.
- Distorted Perceptions of the Perpetrator. Examples include attributing total power to the perpetrator, becoming preoccupied with the relationship to the perpetrator, or preoccupied with revenge.
- Relations with Others. Examples include isolation, distrust, or a repeated search for a rescuer.
- One's System of Meanings. May include a loss of sustaining faith or a sense of hopelessness and despair.

What other difficulties are faced by those who experienced chronic trauma?

Because people who experience chronic trauma often have additional symptoms not included in the PTSD diagnosis, clinicians may misdiagnose PTSD or only diagnose a personality disorder consistent with some symptoms, such as Borderline, Dependent, or Masochistic Personality Disorder.

Care should be taken during assessment to understand whether symptoms are characteristic of PTSD or if the survivor has co-occurring PTSD and personality disorder. Clinicians should assess for PTSD specifically, keeping in mind that chronic trauma survivors may experience any of the following difficulties:

- Survivors may avoid thinking and talking about trauma-related topics because the feelings associated with the trauma are often overwhelming.
- Survivors may use alcohol or other substances as a way to avoid and numb feelings and thoughts related to the trauma.
- Survivors may engage in self-mutilation and other forms of self-harm.
- Survivors who have been abused repeatedly are sometimes mistaken as having a "weak character" or are unjustly blamed for the symptoms they experience as a result of victimization.

Treatment for Complex PTSD

Standard evidence-based treatments for PTSD are effective for treating PTSD that occurs following chronic trauma. At the same time, treating Complex PTSD often involves addressing interpersonal difficulties and the specific symptoms mentioned above. Dr. Herman contends that recovery from Complex PTSD requires restoration of control and power for the traumatized person. Survivors can become empowered by healing relationships which create safety, allow for remembrance and mourning, and promote reconnection with everyday life (1).
References

Epidemiology of PTSD

Jaimie L. Gradus, DSc, MPH

What is epidemiology?

Epidemiology is the study of the distribution and determinants of disease in a population. Numerous studies have been conducted to assess the prevalence of PTSD across different populations. Below is a brief review of some of the major studies that have assessed the prevalence of PTSD in nationally representative samples as well as in samples of Veterans.

What is prevalence?

Prevalence is the proportion of people in a population that have a given disorder at a given time. It represents the existing cases of a disorder in a population or group. Prevalence estimates can be influenced by many factors including disorder occurrence (if new disorder occurrences increase, prevalence will increase) and the duration of the disorder (the longer people live with a disorder, the higher the prevalence). These estimates can also differ by demographic factors such as age and gender. It is important to qualify prevalence estimates with the time at which they were measured, as prevalence estimates can shift over time. Similarly, when interpreting prevalence estimates, it is important to keep in mind that prevalence is dynamic - it can change over people, places, and time.

Often prevalence is discussed in terms of lifetime prevalence. Other times, statistics will be given on current prevalence of PTSD in a given time frame, usually one year. At the end of this fact sheet you will find descriptions of other terms commonly used in epidemiology.

Prevalence of PTSD

U.S. National Comorbidity Survey Replication

The National Comorbidity Survey Replication (NCS-R), conducted between February 2001 and April 2003, comprised interviews of a nationally representative sample of 9,282 Americans aged 18 years and older. PTSD was assessed among 5,692 participants, using DSM-IV criteria. The NCS-R estimated the lifetime prevalence of PTSD among adult Americans to be 6.8% (1). Current past year PTSD prevalence was estimated at 3.5% (2). The lifetime prevalence of PTSD among men was 3.6% and among women was 9.7%. The twelve month prevalence was 1.8% among men and 5.2% among women (3).

These findings are very similar to those of the first National Comorbidity Survey. The original survey was conducted in the early 1990's and comprised interviews of a representative national sample of 8,098 Americans aged 15 to 54 years. In this earlier sample, the estimated prevalence of lifetime PTSD was 7.8% in the general population. Women (10.4%) were more than twice as likely as men (5%) to have PTSD at some point in their lives (4).
PTSD among children and adolescents

To date, no population-based epidemiological study has examined the prevalence of PTSD among children. However, studies have examined the prevalence of PTSD among high-risk children who have experienced specific traumatic events, such as abuse or natural disasters. Prevalence estimates from studies of this type vary greatly; however, research indicates that children exposed to traumatic events may have a higher prevalence of PTSD than adults in the general population (5).

Kilpatrick and colleagues (2003) assessed the prevalence of PTSD among adolescents based on data from the National Survey of Adolescents, which included a household probability sample of 4,023 adolescents between the ages of 12 and 17. Using DSM-IV criteria for PTSD, the six-month prevalence was estimated to be 3.7% for boys and 6.3% for girls (6).

PTSD in other countries

In the late 1990s the World Health Organization (WHO) began collecting epidemiological information on mental health disorders around the world. As of 2008, the research consortium had collected data from nearly 200,000 respondents in 27 countries (7). Published estimates are available of PTSD lifetime prevalence in most of the first 17 countries to complete the World Mental Health Surveys. In general, the estimates for lifetime PTSD prevalence range from a low of 0.3% in China to 6.1% in New Zealand. However, statistics reported from various countries are not directly comparable due to methodological differences in survey administration and sampling strategies.

National Vietnam Veterans Readjustment Study

The National Vietnam Veterans Readjustment Study (NVVRS), conducted between November 1986 and February 1988, comprised interviews of 3,016 American Veterans selected to provide a representative sample of those who served in the armed forces during the Vietnam era. The estimated lifetime prevalence of PTSD among these Veterans was 30.9% for men and 26.9% for women. Of Vietnam theater Veterans, 15.2% of males and 8.1% of females were currently diagnosed with PTSD at the time the study was conducted (8).

Gulf War Veterans

Kang and others conducted a study to estimate the prevalence of PTSD in a population-based sample of 11,441 Gulf War Veterans from 1995 to 1997. PTSD was assessed using the PTSD Checklist (PCL;9) rather than interviews, with those scoring 50 or higher considered to have met criteria for PTSD. The prevalence of current PTSD in this sample of Gulf War Veterans was 12.1%. Further, the authors estimated the prevalence of PTSD among the total Gulf War Veteran population to be 10.1% (10).
Operation Enduring Freedom/Operation Iraqi Freedom

In 2008, the RAND Corporation, Center for Military Health Policy Research, published a population-based study that examined the prevalence of PTSD among previously deployed Operation Enduring Freedom and Operation Iraqi Freedom (Afghanistan and Iraq) service members (11). PTSD was assessed using the PCL, as in the Gulf War Veterans study. Among the 1,938 participants, the prevalence of current PTSD was 13.8%.

Commonly-used epidemiologic terms (12)

What is cumulative incidence?

Cumulative incidence (sometimes called "risk") is the proportion of people that develop a disorder over time among only the population at risk for that disorder. It represents the occurrence of new cases of a disorder in a population or group.

Like prevalence, it is important to qualify cumulative incidence estimates with the length of time over which they are measured (e.g. over 5 years). This is because a large cumulative incidence (or a large amount of new disorder occurrence) occurring over a short period of time has different intervention implications than a large cumulative incidence occurring over a very long period of time.

What is a cumulative incidence ratio?

A cumulative incidence ratio (sometimes called a risk ratio or a relative risk) is a relative measure of the cumulative incidence of disorder in a group exposed to a certain factor compared to the cumulative incidence of a disorder in a group that is unexposed to that factor.

What is the incidence rate?

An incidence rate is the proportion of people who develop a disorder over a period of time among the population at risk for that disorder. It represents the rate at which new cases of a disorder are occurring in a population or group. Incidence rates are expressed as the number of new cases of a disorder per person-time.

What is an incidence rate ratio?

A rate ratio (sometimes called relative risk), is a relative measure of incidence rate of disorder in a group exposed to a certain factor compared to the incidence rate of a disorder in a group that is unexposed to that factor.
What is an odds ratio?

An odds ratio (sometimes called a relative risk) is a relative measure of the odds of a disorder in a group exposed to a certain factor compared to the odds of a disorder in a group unexposed to that factor.

References

Overview of Psychotherapy for PTSD

Hamblen, PhD, Schnurr, PhD, Rosenberg, MA, & Eftekhari, PhD

Several clinical practice guidelines offer recommendations for the treatment of PTSD, for example see the VA/DoD PTSD Clinical Practice Guideline (2010). These guidelines come from different federal agencies, professional organizations, and countries (1-5). The Institute of Medicine (IOM) also published a report in 2007 evaluating the evidence on PTSD treatment (6). The guidelines unanimously recommend cognitive behavioral therapies as the most effective treatment for PTSD, and the majority of guidelines recommend Eye Movement Desensitization and Reprocessing (EMDR) as well.

Cognitive behavioral treatments typically include a number of components, including psychoeducation, anxiety management, exposure, and cognitive restructuring. Exposure and cognitive restructuring are thought to be the most effective components.

Exposure-based treatments

The greatest number of studies has been conducted on exposure-based treatments, which involve having survivors repeatedly re-experience their traumatic event. There is strong evidence for exposure therapy (7-12), and of the various approaches, Prolonged Exposure (PE) has received the most attention. PE (8) includes both imaginal exposure and in vivo exposure to safe situations that have been avoided because they elicit traumatic reminders.

In a multisite randomized controlled trial of PE in female Veterans and active-duty personnel with PTSD, those who received PE experienced greater reduction of PTSD symptoms relative to women who received present-centered therapy and were less likely to meet PTSD diagnostic criteria (13). Moreover, PE was more effective than the combination of PE plus stress inoculation training (SIT), SIT alone, or a waitlist control in female sexual assault survivors (10). In addition, PE alone and PE plus cognitive restructuring reduced PTSD and depression relative to a waitlist control in intention-to-treat and completer samples (11).

Cognitive approaches

Cognitive interventions also are widely supported in treatment guidelines (12, 15-17). Cognitive Processing Therapy (CPT; 18), one of the most well-researched cognitive approaches, has a primary focus on challenging and modifying maladaptive beliefs related to the trauma, but also includes a written exposure component.

Veterans with chronic military-related PTSD who received CPT showed better improvements in PTSD and comorbid symptoms than the waitlist control group (19). A dismantling study of CPT then examined the relative utility of the full protocol compared with its components: cognitive therapy alone and written exposure alone (20). Results indicated significant improvement in PTSD and depression for participants in all three treatments. However, the cognitive therapy
alone resulted in faster improvement than the written exposure alone, with the effects of the full protocol of CPT falling in-between (20). Both CPT and PE have shown great success in outcome research; thus, one logical research question involves whether one is more effective than the other. In a head-to-head comparison, CPT and PE were equally effective in treating PTSD and depression in female sexual assault survivors (7).

Ehlers and Clark have also developed a cognitive therapy for PTSD that involves three goals: modifying excessively negative appraisals, correcting autobiographical memory disturbances, and removing problematic behavioral and cognitive strategies (21). Elements unique to Ehlers and Clark's cognitive therapy include performing actions that are incompatible with the memory or engaging in behavioral experiments. Two randomized controlled trials have compared cognitive therapy to a waitlist, both with positive results (15, 16).

Adding components

Some investigators have added a novel component to an effective treatment in hopes of further optimizing outcomes (22-27). Three groups of investigators compared an enhanced treatment to a waitlist control group: Cloitre and colleagues (23) sequenced skills training in affect and interpersonal regulation before PE; Falsetti and colleagues (24) developed Multiple Channel Exposure Therapy, a combination of PE, CPT, and interoceptive exposure techniques for panic disorder; and Lindauer and colleagues (27) developed Brief Eclectic Therapy, a combination of psychodynamic and cognitive behavioral therapy. These studies showed that the combined treatments were effective, but not whether the additional components enhanced the standard treatments.

Glynn and colleagues (25) compared exposure therapy alone with exposure therapy followed by behavioral family therapy, and Arntz and colleagues (22) compared imaginal exposure alone with imaginal exposure plus imagery rescripting. In both studies, the combined treatment did not result in a greater reduction of PTSD severity, which suggests that the novel component was not necessary. However, statistical power may have been too low to compare the active treatments adequately.

EMDR

In addition to cognitive behavioral therapies, EMDR is recommended in most practice guidelines. Patients receiving EMDR engage in imaginal exposure to a trauma while simultaneously performing saccadic eye movements. There is good evidence that EMDR is more effective than waitlist and nonspecific comparison conditions (28-30). Further, two well-controlled studies compared EMDR to PE. One study found equivalent results (29) while the other found PE to be superior (30). Additional research has investigated the mechanism of action in EMDR, and there is growing evidence that the theorized eye movements are an unnecessary component (31), suggesting that perhaps the mechanism of action is exposure.
Other approaches

Other treatments in addition to cognitive behavioral therapy and EMDR may be effective; however, at this time we do not have enough evidence to confidently indicate that they are effective. For example, despite the appeal of group treatments, results of the few randomized controlled trials of group therapy have been mixed (32-36). In addition, psychodynamic therapy, hypnotherapy, and trauma desensitization were more effective than a waitlist control group in one trial (40). Rogerian supportive therapy was less effective in treating symptoms of PTSD and anxiety than cognitive behavioral therapy in one study (41).

Acceptance and Commitment Therapy (ACT), which is considered a third wave behavioral therapy, focuses on reducing experiential avoidance and engagement with maladaptive thoughts and encourages clients to approach activities consistent with their personal values. Several case studies have documented support for ACT in the treatment of PTSD (37, 38). However, no trials of ACT for PTSD have been published to date. Finally, there is also interest in alternative medicine treatments. For example, acupuncture was as effective as group cognitive behavioral treatment, and both were more effective than the waitlist condition (39).

Conclusion

Overall, cognitive behavioral therapies such as Prolonged Exposure and Cognitive Processing Therapy, as well as Eye Movement Desensitization Reprocessing, are considered first-line treatments for PTSD and have strong evidence bases. Components of these treatments have been combined with other interventions, with no support for improved benefits over the standard treatments alone. Other interventions, such as group treatment, show promise; however, more research is needed before drawing firm conclusions about their effectiveness.

References


Clinician's Guide to Medications for PTSD

Matt Jeffreys, MD

Overview

Posttraumatic Stress Disorder (PTSD) has biological, psychological, and social components. Medications can be used in treatment to address the biological basis for PTSD symptoms and co-morbid Axis I diagnoses. Medications may benefit psychological and social symptoms as well. While studies suggest that cognitive behavioral therapies such as prolonged exposure (PE) and cognitive processing therapy (CPT) have greater effects in improving PTSD symptoms than medications, some people may prefer medications or may benefit from receiving a medication in addition to psychotherapy.

Placebo-controlled double-blind randomized controlled trials are the gold standard for pharmacotherapy. Less strongly supported evidence includes open trials and case reports. It is important for the clinician to question the level of evidence supporting the medications prescribed in PTSD treatment. There are a variety of factors influencing prescribing, including marketing, patient preferences, and clinical custom, all of which can be inconsistent with the evidence base.

Currently, the evidence base is strongest for the selective serotonin reuptake inhibitors (SSRIs). The only two FDA approved medications for the treatment of PTSD are sertraline (Zoloft) and paroxetine (Paxil) (1, 2). All other medication uses are off label, though there are differing levels of evidence supporting their use. In addition to sertraline and paroxetine, there is strong evidence for the SSRI fluoxetine (Prozac) and for the serotonin norepinephrine reuptake inhibitor (SNRI) venlafaxine (Effexor) which are considered first-line treatments in the VA/DoD Clinical Practice Guideline for PTSD. There are a number of biological changes which have been associated with PTSD, and medications can be used to modify the resultant PTSD symptoms. Veterans whose PTSD symptoms have been present for many years pose a special challenge. Studies indicate they are more refractory to the beneficial effects of medications for PTSD symptoms (3).

What core PTSD symptoms are we trying to treat?

The three main PTSD symptom clusters are listed below:

- Re-experiencing. Examples include nightmares, unwanted thoughts of the traumatic events, and flashbacks.
- Avoidance. Examples include avoiding triggers for traumatic memories including places, conversations, or other reminders. The avoidance may generalize to other previously enjoyable activities.
- Hyperarousal. Examples include sleep problems, concentration problems, irritability, increased startle response, and hypervigilance.
What are some of the biological disturbances found in PTSD?

Some of the main biological disturbances in PTSD can be conceptualized as dysregulation of the naturally occurring stress hormones in the body and increased sensitivity of the stress and anxiety circuits in the brain. There is dysregulation of adrenergic mechanisms that mediate the classical fight-flight or freeze response. Yehuda and others have found that patients with PTSD have hypersensitivity of the hypothalamic-pituitary-adrenal axis (HPA) as compared to patients without PTSD (4). Patients have a much greater variation in their levels of adrenocorticoids than patients without PTSD. Other researchers have found differences in both brain structures and brain circuits that process threatening input between patients with PTSD and those without.

It is not known for certain whether these changes were present before the traumatic event and predisposed the person to developing PTSD or whether these changes were the result of the PTSD. One way to think of this is the fear circuitry no longer being integrated with the executive centers of the brain located in the prefrontal cortex (5). Even minor stresses may then set off the "fight or flight" response in patients with PTSD which leads to increased heart rate, sweating, rapid breathing, tremors, and other symptoms of hyperarousal listed above.

How do medications help regulate these responses?

The medications prescribed for treating PTSD symptoms act upon neurotransmitters related to the fear and anxiety circuitry of the brain including serotonin, norepinephrine, GABA, and dopamine among many others. There is great interest in developing newer, more specific agents than are currently available to target the PTSD symptoms described earlier while also minimizing potential side effects of medications.

Studies show that a number of medications are helpful in minimizing the three symptom clusters of PTSD. Most of the time, medications do not entirely eliminate symptoms but provide a symptom reduction and are best used in conjunction with an ongoing program of trauma specific psychotherapy for patients such as PE or CPT.

How do we measure the effects of treatment?

There are a number of self-rating scales and structured clinical interviews to monitor the effects of treatment. Two examples include the Post-Traumatic Stress Disorder Checklist (PCL) and the Clinician Administered PTSD Scale (CAPS). The PCL military or civilian version is an example of a patient self-rating form without stressor information, while the CAPS is an example of a structured clinical interview including stressor information.

There is literature supportive of a strong correlation between the two measures, and the PCL has the advantage of being quick and easy to administer. Both the PCL and the CAPS provide a quantitative measure of the patient's PTSD symptoms and response to treatment over time. This information enhances the clinical assessment and interview with the patient.
What is the evidence base for the specific groups of medications used for PTSD treatment?

Selective Serotonin Reuptake Inhibitors (SSRIs)

These medications are the only FDA approved medications for PTSD. SSRIs primarily affect the neurotransmitter serotonin which is important in regulating mood, anxiety, appetite, and sleep and other bodily functions. This class of medication has the strongest empirical evidence with well designed randomized controlled trials (RCTs) and is the preferred initial class of medications used in PTSD treatment (1, 2). Exceptions may occur for patients based upon their individual histories of side effects, response, and comorbidities.

- An example of an exception would be a PTSD patient with comorbid Bipolar Disorder. In this patient, there is a risk of precipitating a manic episode with the SSRIs. Each patient varies in their response and ability to tolerate a specific medication and dosage, so medications must be tailored to individual needs.

Research has suggested that maximum benefit from SSRI treatment depends upon adequate dosages and duration of treatment. Treatment adherence is key to successful pharmacotherapy treatment for PTSD. Examples of the SSRIs and some typical dosage ranges are listed below:

- Sertraline (Zoloft) 50 mg to 200 mg daily
- Paroxetine (Paxil) 20 to 60 mg daily
- Fluoxetine (Prozac) 20 mg to 60 mg daily

Note: : Only sertraline and paroxetine have been approved for PTSD treatment by the FDA. All other medications described in this guide are being used "off label" and may have empirical support but have not been through the FDA approval process for PTSD.

Other newer antidepressants for PTSD

Antidepressants that work through other neurotransmitter combinations or through different mechanisms for altering serotonin neurotransmission are also helpful in PTSD. Venlafaxine acts primarily as a serotonin reuptake inhibitor at lower dosages and as a combined serotonin and norepinephrine reuptake inhibitor at higher dosages. It is now a recommended first-line treatment for PTSD in the revised VA/DoD Clinical Practice Guideline for PTSD based upon large multi-site RCTs (6).

There have been smaller RCTs with mirtazapine as well as open trials (7). Mirtazapine may be particularly helpful for treatment of insomnia in PTSD. Trazodone is also commonly used for insomnia in PTSD even though there is little empirical evidence available for its use. Nefazodone is still available in a generic form but carries a black box warning regarding liver failure, so liver function tests need to be monitored and precautions taken as recommended in the medication's prescribing information (8, 9).
Examples of the newer antidepressants for PTSD and some typical dosage ranges are listed below:

- Mirtazapine (Remeron) 7.5 mg to 45 mg daily
- Venlafaxine (Effexor) 75 mg to 300 mg daily
- Nefazodone (Serzone) 200 mg to 600 mg daily

All of the antidepressants described above are also effective in treating comorbid Major Depressive Disorder (MDD) which often accompanies PTSD. While bupropion is useful in treating comorbid MDD, it has not been shown effective for PTSD in controlled trials (10). A recent trial showed superior outcomes on MDD when mirtazapine was combined initially with antidepressants versus patients being randomized to monotherapy with fluoxetine (11). This raises important questions regarding costs, side effects, and patient preferences which merit further study.

**Mood stabilizers for PTSD**

These medications, also known as anticonvulsants or anti-epileptic drugs, either block glutamate or potentiate GABA or do both. Topiramate has demonstrated promising results in randomized controlled trials with civilians and Veterans with PTSD, but currently is listed as having no demonstrated benefit in the VA/DoD Clinical Practice Guideline for PTSD.

There are two double-blind, placebo-controlled trials evaluating topiramate as monotherapy in civilians with PTSD (12,13). The trial published in 2007 included 38 participants and found no significant difference in total CAPS scores between topiramate and placebo. The 2010 trial included 38 participants and demonstrated a significant decrease in total CAPS scores. There are also two published double-blind, placebo-controlled trials evaluating topiramate as adjunctive treatment for PTSD in Veterans (14,15). The trial published in 2004 included 67 participants and found a significant decrease in the total CAPS score. The 2007 trial included 40 participants and showed no significant decrease in total CAPS scores.

Based upon the current studies, topiramate could provide a useful option for clinicians in treatment of PTSD symptoms in patients who fail first line pharmacotherapy. Further studies and meta-analyses are needed regarding the place of topiramate in PTSD treatment (16).

Otherwise, despite some promising open label studies, other RCTs have been negative for this group of medications in treating PTSD (17). As a group, this class of medications is helpful in the treatment of comorbid Bipolar Disorder and PTSD. Patients who have Bipolar Disorder and PTSD often benefit from these medications since SSRIs and other antidepressants sometimes precipitate a manic episode. Most require some regular lab work to monitor side effects. Neither lamotrigine nor topiramate require lab work but must be titrated slowly according to package insert directions to avoid potentially serious side effects. Examples are given below:

- Carbamazepine (Tegretol). Requires monitoring of white blood cell counts due to risk of agranulocytosis. Will self-induce its own metabolism and increase the metabolism of other medications including oral contraceptives.
- Divalproex (Depakote). Requires monitoring of liver function tests due to risk of hepatotoxicity and platelet levels due to risk of thrombocytopenia. Target dosage is 10 times the patient's weight in pounds.
- Lamotrigine (Lamictal). Requires slow titration according to the package insert due to risk of serious rash.
- Topiramate (Topimax). Requires clinical monitoring for glaucoma, sedation, dizziness and ataxia.

**Atypical antipsychotics for PTSD**

While originally developed for patients with a psychotic disorder, this class of medications is being applied to patients with many other psychiatric disorders including PTSD. They act primarily on the dopaminergic and serotonergic systems. They can be used when a person with PTSD has a psychotic disorder. There is some evidence that they are useful in ameliorating psychotic symptoms in PTSD patients. The real question is whether these medications are useful in PTSD when psychotic disorder or symptoms are not present.

Previously, a number of small single-site studies suggested that atypical antipsychotic agents were effective adjunctive treatment for PTSD patients who had poor responses to first-line SSRIs or SNRIs (18). A recent large-scale multi-site trial of risperidone as an adjunctive agent for SSRI poor/partial responders showed that there was no benefit (in comparison with a placebo group) for adjunctive use of this agent. As a result the recent VA/DoD PTSD Clinical Practice Guideline has been revised as follows:

- Atypical antipsychotics are not recommended as mono-therapy for PTSD.
- Risperidone (Risperdal) is contraindicated for use as an adjunctive agent - potential harm (side effects) exceeds benefits.
- There is insufficient evidence to recommend any other atypical antipsychotic as an adjunctive agent for PTSD.

**Other medications for PTSD**

There are a number of other medications that can be helpful for specific PTSD symptoms or that have been used as second line agents including the following:

- Prazosin (Minipress)
- Tricyclic Antidepressants (such as Imipramine)
- Monoamine Oxidase Inhibitors (MAOIs) (such as Phenelzine)

Prazosin has been found to be effective in RCTs in decreasing nightmares in PTSD. It blocks the noradrenergic stimulation of the alpha 1 receptor. Its effectiveness for PTSD symptoms other than nightmares has not been determined at this time (19, 20).

The tricyclic antidepressants and MAOIs act on a number of neurotransmitters. While there are RCTs supporting their use, these medications are not used as first line agents due to their safety
The tricyclics have quinidine like effects on the heart and can cause ventricular arrhythmias especially in overdose.

The MAOI phenezine has been shown to be effective in PTSD. Careful management of the MAOIs and strict dietary controls are important because they can cause potentially fatal hypertensive reactions when taken with other medications or certain foods rich in tyramine. MAOIs can also provoke the potentially fatal serotonin syndrome when used concurrently with SSRIs.

Buspirone and beta blockers are sometimes used adjunctively in treatment of hyperarousal symptoms, though there is little empirical evidence in support of this. Buspirone acts on serotonin and might reduce anxiety in PTSD without sedation or addiction. There are some case reports supporting its use. Beta blockers block the effects of adrenalin (epinephrine) on organs such as the heart, sweat glands, and muscles. There is interest in using beta blockers to prevent PTSD, though the evidence at the current time does not support this. Beta blockers reduce the peripheral manifestations of hyperarousal and may reduce aggression as well. They may be used for comorbid conditions such as performance anxiety in the context of social phobia for example.

**Benzodiazepines and PTSD**

Benzodiazepines act directly on the GABA system which produces a calming effect on the nervous system. This is the only potentially addictive group of medications discussed. Studies have not shown them to be useful in PTSD treatment as they do not work on the core PTSD symptoms (23, 24). There are several other concerns with the benzodiazepines including potential disinhibition, difficulty integrating the traumatic experience, interfering with the mental processes needed to benefit from psychotherapy, and addiction. Because of their potential for addiction and disinhibition, they must be used with great caution in PTSD. Examples are listed below:

- Lorazepam (Ativan)
- Clonazepam (Klonopin)
- Alprazolam (Xanax)

**Developing new medications for PTSD**

The pathophysiological mechanism of PTSD in the nervous system is unknown, but there are several interesting areas that could lead to new drug development for the treatment or the prevention of PTSD. There are competing hypotheses about the role of glucocorticoids following trauma and their effects on the brain. It might be possible to intervene at some level in the hypothalamic-pituitary-adrenal axis or at the level of the glucocorticoid receptors in the brain to modulate the effects of stress and the development of PTSD. Neuropeptides such as Substance P and Neuropeptide Y (NPY) have been implicated in PTSD as well (25). Combat troops exposed to stress have been found to have lower levels of NPY. Perhaps altering this neuromodulator could improve the resiliency of the brain to the effects of trauma. One challenge with this new focus research is dealing with the blood-brain barrier for introducing neuropeptides into the brain.
D-cycloserine (DCS) has been used in panic disorder, specifically phobia and social phobia, to enhance the effects of exposure therapy (26). It is a partial agonist of the glutamatergic N-methyl-D-aspartate (NMDA) receptor. Based upon animal research supporting the use of DCS to facilitate extinction of conditioned fear, it is hypothesized that use of DCS in conjunction with exposure therapy may reduce the number of psychotherapy sessions required (27). This line of research recognizes a paradigm shift in the use of pharmacotherapy to assist learning during psychotherapy as opposed to directly affecting PTSD symptoms (28).

Memantine (Namenda) is a drug of much interest in preventing neurodegeneration by protecting against glutamatergic destruction of neurons. It has been approved for use in certain neurodegenerative conditions such as Alzheimer's disease. This drug could be potentially useful in preventing hypothesized neurodegeneration in the hypothalamus and memory loss in PTSD.

Current research is looking towards the possibility of one day intervening early in the course of PTSD with a combination of psychotherapy and pharmacotherapy that would prevent the development of the pathophysiology of PTSD in the brain.

**Common barriers to effective medication treatment in PTSD**

There are several common barriers to effective medication treatment for PTSD which are listed below. These need to be addressed with patients in an ongoing dialogue with their prescribing clinician. Side effects need to be examined and discussed, weighing the risks and the benefits of continued medication treatment. Patient education about the side effects, necessary dosages, duration of treatment, and taking the medications consistently can improve adherence. A simple intervention of setting up a pill organizer weekly can go a long way to improve adherence.

- Fear of possible medication side effects including sexual side effects
- Feeling medication is a "crutch" and that taking it is a weakness
- Fear of becoming addicted to medications
- Taking the medication only occasionally when symptoms get severe
- Not being sure how to take the medication
- Keeping several pill bottles and not remembering when the last dosage was taken
- Using "self medication" with alcohol or drugs with prescribed medications

**A final word regarding medications and treatment for PTSD**

A more comprehensive discussion of pharmacotherapy can be found online in the [VA/DoD PTSD Clinical Practice Guidelines](https://www.healthcare.mil/VA/DoD-PTSD-Clinical-Practice-Guidelines). Based upon current knowledge, most prescribing clinicians view pharmacotherapy as an important adjunct to the evidenced based psychotherapies for PTSD. While there are few direct comparisons of pharmacotherapy and psychotherapy, the greatest benefits of treatment appear to come from evidenced based therapies such as CPT, PE, and patients need to be informed of the risks and benefits of the differing treatment options. When using a combined approach of medication and therapy, it is important to keep several practices in mind.
If treatment is being provided by a therapist and a prescriber, it is important for the clinicians to discuss treatment response and to coordinate efforts. It is important for the prescribing clinician to have an ongoing dialogue with the patient about their medications and side effects. It is important for the patient to take an active role in his or her treatment rather than feeling they are a passive recipient of medications to alleviate their symptoms. There is emerging evidence that when given a choice, most patients will select psychotherapy treatment for their PTSD symptoms rather than medications.

Important Considerations

- Patients with anxiety disorders including PTSD may be very aware of their somatic reactions, and it is important to start low and go slow often on dosage adjustments to improve patient adherence.
- Be sure to ask female patients of childbearing age about contraception when prescribing medication.
- Be sure to ask all patients about substance abuse as well.
- Once medications are started, it is crucial that the provider remember to discontinue medications which are not proving efficacious and to simplify the number and types of medications used whenever possible.

References