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Posttraumatic Stress Disorder in Children

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Author: Roy H Lubit, MD, PhD; Chief Editor: Caroly Pataki, MD

Overview

Practice Essentials

Posttraumatic stress disorder (PTSD) in children and adolescents occurs as a result of a child's exposure to 1 or more traumatic events: actual or threatened death, serious injury, or sexual violence. The victim may experience the event, witness it, learn about it from close family members or friends, or experience repeated or extreme exposue to aversive details of the event. Potentially traumatic events include physical or sexual assaults, natural disasters, and accidents.

The impact of single-incident trauma (such as a car accident or being beaten up) is different from that of chronic trauma such as ongoing child abuse. In addition to the symptoms of PTSD, sexual assaults have widespread impacts on the victim's psychological functioning and development. Abuse by a caretaker also creates special problems.

The impact of traumatic events on children is often more far reaching than trauma on an adults, not simply because the child has fewer emotional and intellectual resources to cope, but because the child's development is adversely affected. If an adult suffers trauma and a deterioration in functioning, after time when the person heals, he can generally go back to his previous state of functioning, assuming that he has not done serious damage to his relationships, studies, and work. A child, however, will be knocked off of his developmental path and after healing from the trauma will be out of step with his peers and school demands. He will therefore suffer ongoing frustration and disappointments even when he has healed from the trauma.

Many individuals who suffer traumatic events develop depressive or anxiety symptoms other than PTSD. An individual who has some symptoms of PTSD but not enough to fulfill the diagnostic criteria is still adversely affected. The diagnosis of Unspecified Trauma- and Stressor-Related Disorder should be considerred.[1]

Roughly, 15% to 43% of children suffer a traumatic incident. Of these children, 3% to 15% of girls and 1% to 6% of boys develop PTSD. Rates of PTSD are higher for interpersonal violence. Higher-intensiity events have a greater risk to induce PTSD.

See Posttraumatic Stress Disorder (PTSD), a Critical Images slideshow, to help recognize the symptoms of PTSD and to determine effective treatment options.

Signs and symptoms

The most common symptoms of PTSD include the following:

- Reexperiencing the trauma (nightmares, intrusive recollections, flashbacks, traumatic play)
- Avoidance of traumatic triggers, memories and situations that remind the child of the traumatic event
- Exaggerated negative beliefs about onself and the world arising from the event
- Persisitent negative emotional state or inability to experience positive emotions
- Feelings of detachment from people
- Marked loss of interest in or participation in significant activities
- Inability to remember part of the traumatic event
- Sleep problems

- Irritability
- Reckless or self-destructive behavior
- Hypervigilence
- Exaggerated startle
- Concentration problems

Children may reexperience traumatic events in various ways, such as the following:

- Flashbacks and memories
- Behavioral reenactment
- Reenactment through play

No specific physical signs of PTSD exist; however, various physical findings have been noted in children with PTSD, including the following:

- Smaller hippocampal volume
- Altered metabolism in areas of the brain involved in threat perception (eg, amygdala)
- Decreased activity of the anterior cingulate
- Low basal cortisol levels
- Increased cortisol response to dexamethasone
- Increased concentration of glucocorticoid receptors and, possibly, glucocorticoid receptor activity in the hippocampus

See Presentation for more detail.

Diagnosis

The American Psychiatric Association's Diagnostic and Statistical Manual, Fifth Edition (DSM-5), lists the following diagnostic criteria for PTSD in adults, adolescents, and children older than 6 years:

- Exposure to actual or threatened death, serious injury, or sexual violence (any undesired sexual activity is sexual violence.
- Presence of 1 or more specified intrusion symptoms in association with the traumatic event(s)
- Persistent avoidance of stimuli associated with the traumatic event(s)
- Negative alterations in cognitions and mood associated with the traumatic event(s)
- Marked alterations in arousal and reactivity associated with the traumatic events(s)
- Duration of the disturbance exceeding 1 month
- Clinically significant distress or impairment in important areas of functioning
- Inability to attribute the disturbance to the physiologic effects of a substance or another medical condition

DSM-5 criteria for PTSD in children aged 6 years or younger are as follows:

- Directly experiencing the traumatic event, witnessing the event, or learning it occurred to a parent or caregiver
- Intrusion symptoms associated with the event (recurrent memories, distressing dreams, dissociative reactions, marked distress or physiological reaction in response to exposure to traumatic triggers)
- Avoidance of situations or things that arouse recollections of the trauma OR negative alterations in cognitions (increased negative emotions, decreased interest in significant activities, social withdrawal, decreased positive emotions)
- Alterations in arousal and reactivity associated with the traumatic events (two of irritability, hyperigilance, exaggerated startle, concentration problems, sleep disturbance)
- Duration of the disturbance exceeding 1 month

- Clinically significant distress or impairment in relationships with parents, siblings, peers, or other caregivers or in school behavior
- Inability to attribute the disturbance to the physiologic effects of a substance or another medical condition

There are no specific laboratory studies or specific imaging studies that establish the diagnosis of PTSD. Several psychological tests may be helpful in PTSD, including the following:

- Child and Adolescent Psychiatric Assessment: Life Events Section and PTSD Module (CAPA-PTSD)
- Children's PTSD Inventory (CPTSDI)
- Child PTSD Symptom Scale (CPSS)
- Abbreviated UCLA PTSD Reaction Index
- Trauma Symptom Checklist for Children (TSCC)
- Impact of Events Scale
- Screen for Child Anxiety Related Disorders (SCARED)
- Beck Depression Inventory
- Mississippi Scale for Combat-Related PTSD

See Overview and Workup for more detail.

Management

The initial goals of treatment for children with PTSD are as follows:

- Provide a safe environment
- Reassurance, emotional support, nurturance
- Attend to urgent medical needs

Psychological therapy for PTSD in children involves the following:

- Helping the child gain a sense of safety
- Addressing the multiple emotional and behavioral problems that can arise

Nonpharmacologic forms of therapy include the following:

- Cognitive-behavioral therapy (CBT), especially trauma-focused CBT (TF-CBT)
- Dialectical Behavior Therapy (DBT)
- Relaxation techniques (eg, biofeedback, yoga, deep relaxation, self-hypnosis, or meditation; efficacy unproven)
- Play therapy

In children who have persistent symptoms despite CBT or who need additional help with control of symptoms, pharmacologic treatment may be considered, as follows:

- Selective serotonin reuptake inhibitors (SSRIs) - Medications of choice for managing anxiety, depression, avoidance behavior, and intrusive recollections; however, not specifically approved by the FDA for treatment of PTSD in the pediatric population
- Beta blockers (eg, propranolol)
- Alpha-adrenergic agonists (eg, guanfacine and clonidine)
- Mood stabilizers (eg, carbamazepine and valproic acid)
- Atypical antipsychotics (infrequently used)

See Treatment and Medication more detail.

Background

Posttraumatic stress disorder (PTSD) in children and adolescents occurs as a result of a child's exposure to one or more traumatic events that were perceived to threaten serious injury to self or others and led the child to feel intense fear, helplessness, or horror. Traumatic events can take many forms, including accidents, painful medical procedures, physical or sexual assaults, natural disasters, traumatic death or injury of a loved one, and emotional abuse or neglect.[2, 3, 4, 5]

A 2005 survey of mental health clinicians who treat pediatric patients found interpersonal victimization to be the most prevalent form of trauma exposure; this includes physical abuse, sexual abuse, and emotional abuse, as well as exposure to domestic violence and the disorganization that results from parental substance abuse in the household.[6] The prevalence of childhood exposure to noninterpersonal trauma (eg, accidents, disasters, or illness) is significantly less.[7]

Traumatic events overwhelm the individual's ability to cope and leave the child or adolescent feeling that the world is dangerous and out of control. The traumatic event deeply affects the child or adolescent's view of himself or herself and of the world. The memory of the event is encoded differently from normal memories. Rather than thinking about it, the person reexperiences it when it comes to memory. The pain of reexperiencing leads the individual to be afraid of the memory, and not simply afraid of the event.

The key elements of PTSD are the intrusive recollections, numbing and withdrawal, cognitive changes, and hyperarrousal. Many individuals develop depression or an anxiety disorder after a traumatic event, rather than PTSD.

There are other impacts as well. Suffering a traumatic event or events fosters an external locus of control. The individual feels that he or she is at the mercy of the world rather than the master of one's own fate. This has serious implications for how the individual leads his or her life in the future. Learned helplessness, a tendency to fail to escape from dangerous situations when escape is possible, also often results. Decreased resilience and increased vulnerability to future traumatic events also results.

Traumatic experiences, especially repeated ones, as occurs in child abuse, greatly increases the risk for the development of borderline personality disorder, oppositional defiant disorder, conduct disorder, and depression in adult years. Studies have shown a marked increase in medical costs in children who suffered abuse in childhood. Sexual abuse has wide-ranging impacts on the child's ability to have stable and fulfilling romantic relationships during adult years. Dissociative disorders can also result.

Females are twice as likely to develop PTSD as males are, whereas males are more likely to exhibit conduct disorder, antisocial behavior, or criminal behavior after significant violent trauma.[8]

The main pathogenic elements in PTSD are the loss of control, the unpredictability, and the extremely aversive nature of the event(s). Most traumatized children do not develop long-term sequelae as a result of the trauma, but a significant minority respond in a way that has a long-lasting major impact on their emotions and behaviors. These children are at risk for PTSD, regardless of whether the trauma arose from a single event or from an ongoing pattern of abuse.

The family is known to pay a vital role in determining the eventual impact of the traumatic experience on the child, and parental support is often a key mediating factor in how the child experiences and adapts to the victimizing circumstances.[7] The support of a child's family, along with adequate coping and emotional functioning of the child's parents, may very well militate against the development of PTSD in a child exposed to trauma.

Severe emotional trauma has widespread effects on children's development. These effects include undermining children's sense of security in a reasonable and safe world in which they can grow and explore, as well as rendering them unable to believe that their parents can protect them from harm. The premature destruction of these beliefs can have profound negative consequences on development.

Traumatized children and adolescents are frequently preoccupied with danger and vulnerability, and this preoccupation sometimes leads to misperceptions of danger, even in situations that are not threatening. Multiple researchers (eg, Kardiner and van der Kolk[9]) note that once posttraumatic stress symptoms emerge, PTSD leads to neurophysiologic correlates that impact brain function in developing children and adolescents.

Some forms of child maltreatment result in actual physical injuries that may call for intensive medical treatment that can be painful and frightening for the child. In such cases, the psychological impact encompasses the experiences of both the physical abuse and the medical treatment required. Accordingly, it is left to the child victim to define an event or experience as traumatic; the role of the health care professional who seeks to help such a child is to shoulder the responsibility of treatment and assistance.

For further information on the problem of child and adolescent maltreatment and disordered parent-child relationships, see Child Abuse & Neglect: Physical Abuse, Child Abuse & Neglect: Sexual Abuse, and Child Abuse & Neglect: Reactive Attachment Disorder.

Diagnostic criteria (DSM-5) in individuals older than 6 years

In the American Psychiatric Association's Diagnostic and Statistical Manual, Fifth Edition (DSM-5), there are 8 specific diagnostic criteria for PTSD in adults, adolescents, and children older than 6 years.[1]

The first criterion is exposure to actual or threatened death, serious injury, or sexual violation in 1 or more of the following ways:

- Direct experience of the traumatic events(s)
- In-person witnessing of the event(s) occurring to others
- Learning that the event(s) occurred to a close family member or close friend (in cases of actual or threatened death, the event[s] must have been violent or accidental)
- Experience of repeated or extreme exposure to aversive details of the traumatic event(s) (eg, first responders collecting human remains or police officers repeatedly exposed to details of child abuse)

The second criterion is the presence of 1 or more of the following intrusion symptoms in association with the traumatic event(s), beginning after the event(s) occurred:

- Recurrent, involuntary, and intrusive distressing memories of the traumatic event(s); in children older than 6 years, repetitive play may occur in which themes or aspects of the traumatic event(s) are expressed
- Recurrent distressing dreams in which the content or affect of the dream is related to the event(s); children may have frightening dreams without recognizable content
- Dissociative reactions (eg, flashbacks) in which the individual feels or acts as if the traumatic event(s) were recurring; children may carry out trauma-specific reenactment during play
- Intense or prolonged psychological distress at exposure to internal or external cues that symbolize or resemble any aspect of the traumatic event(s)
- Marked physiologic reactions to internal or external cues that symbolize or resemble an aspect of the traumatic event(s)

The third criterion is persistent avoidance of stimuli associated with the traumatic event(s), beginning after the event(s) occurred, as evidenced by either or both of the following:

- Avoidance of or efforts to avoid distressing memories, thoughts, or feelings about or closely associated with the traumatic event(s)
- Avoidance of or efforts to avoid external reminders (eg, people, places, conversations, activities, objects, or situations) that arouse distressing memories, thoughts, or feelings about or closely associated with the traumatic event(s)

The fourth criterion is the presence of negative alterations in cognitions and mood associated with the traumatic event(s), beginning or worsening after the event(s) occurred, as evidenced by 2 or more of the following:

- Inability to remember an important aspect of the traumatic event(s) (typically a consequence of dissociative amnesia and not of factors such as head injury, alcohol or drugs)
- Persistent and exaggerated negative beliefs or expectations about self, others, or the world
- Persistent distorted cognitions about the cause or consequences of the traumatic event(s) that lead individuals to blame themselves or others
- Persistent negative emotional state (eg, fear, horror, anger, guilt, or shame)
- Markedly diminished interest or participation in significant activities
- Feelings of detachment or estrangement from others
- Persistent inability to experience positive emotions (eg, happiness, satisfaction, or loving feelings)

The fifth criterion is the development of marked alterations in arousal and reactivity associated with the traumatic events(s), beginning or worsening after the event(s) occurred, as evidenced by 2 or more of the following:

- Irritable behavior and angry outbursts (with little or no provocation), typically expressed as verbal or physical aggression toward people or objects
- Reckless or self-destructive behavior
- Hypervigilance
- Problems with concentration
- Exaggerated startle response

- Sleep disturbance (eg, difficulty in falling or staying asleep or restlessness during sleep)

The sixth criterion is that the duration of the disturbance must exceed 1 month.

The seventh criterion is that the disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.

The eighth and final criterion is that the disturbance cannot be attributed to the physiologic effects of a substance (eg, a medication or alcohol) or another medical condition.

Additional specifiers that may be used include the following:

- With dissociative symptoms - The patient shows persistent or recurrent symptoms of depersonalization or derealization
- With delayed expression - Full diagnostic criteria are not met until 6 months after the traumatic event (though some symptoms may develop immediately)

Diagnostic criteria (DSM-5) in children aged 6 years or younger (preschool subtype)

DSM-5 list 7 specific diagnostic criteria for PTSD in children aged 6 years or younger.[1]

The first criterion is exposure to actual or threatened death, serious injury, or sexual violation in 1 or more of the following ways:

- Direct experience of the traumatic events(s)
- In-person witnessing of the event(s) occurring to others, especially primary caregivers
- Learning that the event(s) occurred to a parent or caring figure

The second criterion is the presence of 1 or more of the following intrusion symptoms in association with the traumatic event(s), beginning after the event(s) occurred:

- Recurrent, involuntary, and intrusive distressing memories of the traumatic event(s); spontaneous and intrusive memories may not necessarily appear distressing and may be expressed as play reenactment
- Recurrent distressing dreams in which the content or affect of the dream is related to the event(s); it may not be possible to establish that the frightening content is related to the traumatic event
- Dissociative reactions (eg, flashbacks) in which the child feels or acts as if the traumatic event(s) were recurring; children may carry out trauma-specific reenactment during play
- Intense or prolonged psychological distress at exposure to internal or external cues that symbolize or resemble any aspect of the traumatic event(s)
- Marked physiologic reactions to reminders of the traumatic event(s)

The third criterion is the presence of 1 or more of the following symptoms, representing either persistent avoidance of stimuli associated with the trauma (the first 2 symptoms) or negative alterations in cognition and mood associated with the traumatic event(s) or worsening after the trauma (the last 4 symptoms):

- Avoidance of or efforts to avoid distressing memories, thoughts, or feelings about or closely associated with the traumatic event(s)
- Avoidance of or efforts to avoid people, places, conversations, or interpersonal situations that arouse recollections of the traumatic event(s)
- Increased frequency of negative emotional states (eg, fear, horror, anger, guilt, or shame)
- Markedly diminished interest or participation in significant activities, including constriction of play
- Socially withdrawn behavior
- Persistent reduction in expression of positive emotions

The fourth criterion is the development of alterations in arousal and reactivity associated with the traumatic events(s), beginning or worsening after the event(s) occurred, as evidenced by 2 or more of the following:

- Irritable behavior and angry outbursts (with little or no provocation), typically expressed as verbal or physical aggression toward people or objects (including extreme temper tantrums)
- Hypervigilance

- Exaggerated startle response
- Problems with concentration
- Sleep disturbance (eg, difficulty in falling or staying asleep or restlessness during sleep)

The fifth criterion is that the duration of the disturbance must exceed 1 month.

The sixth criterion is that the disturbance causes clinically significant distress or impairment in relationships with parents, siblings, peers, or other caregivers or in school behavior.

The seventh and final criterion is that the disturbance cannot be attributed to the physiologic effects of a substance (eg, a medication or alcohol) or another medical condition.

Additional specifiers that may be used include the following:

- With dissociative symptoms - The patient shows persistent or recurrent symptoms of depersonalization or derealization
- With delayed expression - Full diagnostic criteria are not met until 6 months after the traumatic event (though some symptoms may develop immediately)

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Pathophysiology

The immediate physiologic response to trauma can be significant and may set the stage for persistent PTSD symptoms. Alterations in the noradrenergic and dopaminergic neurotransmitter systems and the stress response of the hypothalamic-pituitary-adrenal axis are well documented. The effects of these responses in the central nervous system (CNS) can affect later neurophysiologic responses.

Hyperarousal and overgeneralization of threat can evolve, prompting the child to react in an extreme fashion to events that resemble or remind the child of the original trauma. Some evidence suggests that chronic PTSD, perhaps through these physiologic changes, can lead to changes in brain microarchitecture.

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Etiology

PTSD may be caused by exposure to a severe traumatic stress that threatens death or serious injury or threat to personal integrity. However, not every child or adolescent who experiences trauma develops PTSD. The development of PTSD depends on the individual’s vulnerability versus resilience.

Children with preexisting mental health problems are more likely to be affected by a traumatic experience, particularly if they were previously anxious or are described as having a slow-to-warm-up temperament, or high reactivity. Limited intelligence decreases one’s coping mechanism and increases vulnerability. Parental support is also crucial.

PTSD may be initiated by either direct or witnessed exposure to a single or repeated traumatic event. Accordingly, some authorities divide trauma exposures into 2 broad types as follows[10] :

- Type I exposure - A single acute, unpredictable stressor; an individual may have repeated exposures to this kind of stressor
- Type II exposure - Chronic, enduring stressors (eg, ongoing physical or sexual abuse)

Types of traumatic events that may give rise to PTSD include the following:

- Rape
- Sexual and physical abuse
- Car accidents[11]
- Fires
- Experiencing war

- Receiving a serious medical diagnosis
- Being subjected to invasive painful treatment of medical problems
- Natural disasters with devastating impact[12]

Risk and protective factors

Numerous factors increase the likelihood that a child will develop PTSD in response to a given stress, including the following:

- Previous exposure to traumatic incidents
- Repeated trauma - The chronicity of the traumatic events experienced (ie, chronicity) appears to influence the presence and severity of psychological sequelae; these sequelae may then be exacerbated by further traumatic experiences (as in abused or neglected children who are taken into state custody and moved among foster homes and child protective services (CPS) placements or in children who experience a traumatic accidental injury and subsequently must undergo painful surgery and invasive procedures)
- Personal threat - The degree to which the child actually feels frightened or personally threatened by the traumatic event(s) is known as personal threat; PTSD is more likely with higher degrees of violence and personal threat
- Developmental state - Younger children are less able to process traumatic experiences verbally than older children and adults are, as well as less able to narrate them and understand their meaning; in some cases, this may mitigate their risk of PTSD
- Relationship to perpetrator - Trauma caused by a person rather than resulting from an accident is more likely to lead to PTSD; in particular, being abused by a known and trusted person undermines the child's sense of safety and increases the likelihood of PTSD
- Parental support - Traumatized children who are developing in a secure and supportive environment are less susceptible to PTSD than children who endure ongoing abuse; parental reaction has a critical factor effect on the child's reaction, in that parental difficulty coping with the trauma may cause the child to feel overwhelmed, whereas parental ability to cope and to provide a safe haven may markedly enhance the child's own ability to cope, as well as reduce the chances of protracted PTSD
- Extrafamilial support - The caregiver's response is also critical; if the caregiver reassures the child, the outcome of the trauma is better than if the caregiver is also shaken, devastated, or withdrawn
- Guilt - If the child feels guilty about the traumatic event or somehow responsible for it, the likelihood of more severe PTSD and depressive symptoms is increased
- Resilience - Children with greater resilience (see below) have a decreased risk of PTSD
- A preexisting psychiatric disorder
- Symptoms at the time of the abuse - Eventual PTSD is more likely in children who have symptoms of avoidance, emotional constriction, and physiologic hyperarousal soon after the abuse; it is particularly likely to develop if a child experiences dissociation at the time of the trauma[13]
- Physiologic response - Children who have an elevated heart rate in the period soon after the trauma (eg, those seen in an emergency department [ED]) are more likely to develop PTSD

Resilience

Resilience, in its most general sense, may be defined as the ability to adapt positively to adversity.[14] It seems to be related to intelligence, ability to talk about one's experiences, ability to understand others, and ability to seek help. Research into resilience in adolescence and adulthood after childhood maltreatment has identified essential components to resilience, including genetic, biologic, cognitive, and interpersonal factors.[15]

Earlier work on resilience noted that individual characteristics such as intelligence, physical attractiveness, and temperament are protective, in that they render the individual attractive to adults, who are thus motivated to provide support and care. Subsequent studies identified neurobiologic variables. For example, individuals with high levels of monoamine oxidase A are less likely to develop antisocial behavior after maltreatment in childhood.[16, 17, 14]

A longitudinal study following maltreated children through adolescence and midlife provided valuable insights into our understanding of how resilience emerges.[15] The dimensions of resilience evaluated were similar to those evaluated in

other studies, including the following:

- Presence or absence of major depressive disorder, recurrent depressive disorder, suicidality, suicide attempts, any anxiety disorder, PTSD, or substance-related disorder
- Personality functioning
- Relationship stability
- Legal status
- Self-rated health

With adversity experienced in adolescence controlled for, the maltreated patients were at greater risk for adult substance-related disorders, PTSD, suicidality, and recurrent depression than control subjects were[15] ; nevertheless, 44.5% were characterized as resilient. In addition, recovery and resilience appeared to occur in concert with parental support and encouragement. Positively perceived parental care, supportive adolescent peer relationships and adult romantic relationships, and positive personality factors all supported resilience.

Epidemiology

United States statistics

The lifetime prevalence of PTSD is 8%.[18] The incidence and course of PTSD vary and depend on various factors, including the type of trauma, the proximity to the stressor, and the reaction of the child's parents.

Epidemiologic studies of the incidence and prevalence of PTSD in children and adolescents remain limited. In the general US population of children and adolescents, approximately one third of children (range, 14%-43%) have experience a traumatic event before adulthood, including the death of a loved one, a serious accident, a natural disaster, sexual abuse, or rape.[19] Of children and adolescents who have had a traumatic experience, 3%-15% of girls and 1%-6% of boys could be diagnosed with PTSD.

Studies of PTSD in at-risk pediatric and adolescent populations (as opposed to the general US population) paint a different picture, reporting much higher rates of PTSD. For example, nearly all children who witness a parental homicide, approximately 90% of sexually abused children, 77% of children exposed to a school shooting, and 35% of urban youth exposed to community violence go on to develop PTSD.

A National Institute of Justice report, based on an analysis of the 1995 National Survey of Adolescents, found the lifetime prevalence of PTSD to be 4-5 times higher among boys who had been sexually assaulted (28.3%) than in boys who had not (5.4%).[20] Rates in girls were similar (29.8% and 7.1%, respectively). The lifetime prevalence of PTSD was 27.4% in girls who were either physically assaulted or received physically abusive punishment and 6% in those who were not; rates in boys were 15.2% and 3.1%, respectively.

Internet-related PTSD

As the use of the Internet grows, the risk of Internet-related sex crimes, such as cyberstalking, increases. The Youth Internet Safety Survey, conducted first in 2001 (YISS-1[21]) and then again in 2006 (YISS-2[22]), collected survey data from nationally representative groups of children and adolescents aged 10-17 years who regularly used the Internet.

Although the percentage of children and adolescents who received unwanted sexual solicitations decreased between 2001 and 2006, from 19% to 13%, the percentage who encountered unwanted exposures to sexual material increased, from 25% to 34%.[21, 22] The percentage of participants who experienced online harassment also increased, from 6% to 9%.

Among solicited youths, 25% reported high levels of distress after the incident or incidents.[21] The participants most disturbed by the unwanted sexual solicitations included younger individuals (aged 10-13 years), those who were solicited on a computer away from their home, and those who experienced aggressive solicitations (defined as the solicitor attempting to make contact with the youth offline).

International statistics

Data on the prevalence of PTSD in countries outside the United States are sparse. Incidence and prevalence vary widely from country to country because of differences in data collection methods, as well as widely divergent cultural and societal factors. In a study by Hepp et al, which summarized a great deal of data from numerous countries, the lowest lifetime prevalence of PTSD (0.4%) was reported in German males aged 14-24 years, and the highest prevalence (43.8%) was reported in Algerian females older than 16 years.[23]

The prevalence of PTSD in a location overwhelmingly depends on the endemicity of violence in the region. In places where armed conflicts exist, children frequently experience trauma, whether as direct objects of violence, as witnesses to violence, or as incidental victims of dangerous surrounding conditions.

Age-related demographics

PTSD occurs in people of all ages, but younger and elderly persons are the most vulnerable. Older children with language abilities are more likely to be able to recount traumatic episodes. In younger children, behavioral changes may be the only observable signs of trauma.

Sex-related demographics

PTSD is more common in women than in men. Males are more likely to be victims of physical assault, and females are more frequently victims of sexual assault.

Girls report greater PTSD symptoms after trauma and are 2-6 times more likely to experience PTSD after sexual abuse than boys are. It is not known whether the higher lifetime prevalence of PTSD among females is related to rates and types of trauma exposure or to a particular vulnerability to PTSD.

The non-PTSD symptoms that abused and neglected girls manifest may differ from those noted in boys. Among sexually abused children, boys are more likely to develop externalizing behaviors (eg, oppositional behavior or impulsivity), whereas girls are more likely to develop internalizing behaviors (eg, depression or anxiety).

Race-related demographics

No major racial predominance is observed; however, PTSD is more common among individuals in low socioeconomic groups and among those living in areas where violence is endemic.

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Prognosis

The prognosis of PTSD is highly variable. Alone, PTSD is not directly fatal. Nevertheless, it frequently leads to significant comorbidity. In some cases, symptoms may reoccur months or years later, in response to subsequent stressful or life-changing events.

Although one half of individuals with PTSD recover within 3 months, some proceed to develop a long-term problem with a posttraumatic personality, including impulsive behavior, substance abuse, aggression, eating disorders, sexual acting out, labile mood, rage, panic attacks, and dissociation. Patients with chronic PTSD have an increased risk of suicidal ideation and mortality from suicide. Chronic PTSD is associated with work impairment, having an impact similar to that of major depression.

In general, the outcome of PTSD depends on the severity and chronicity of the trauma and the impact on the life of the child, the reactions and behavior of caregivers, and the opportunity to receive treatment. Long-term (type II) exposure to trauma has a far more serious prognosis exposure to individual traumatic events (type I).

The morbidity associated with PTSD is considerable, particularly for children. In addition to the symptoms of numbing, hyperarousal, and recollections of the event that adults experience, children suffer from a decreased ability to participate in the normal academic and social activities of childhood. Therefore, a traumatic event can send a child down a new developmental path, one that is less favorable than the one the child was previously on.

A host of emotional and behavioral problems frequently arise as a result of PTSD and are not part of the criteria for categorical diagnosis. These include disruptive behavior disorders, eating disorders, sexual acting out, other risk-taking activities, depression, the full range of anxiety disorders, dissociation, mood lability, violence, and difficulty concentrating.

Studies of adults who were sexually or physically abused as children demonstrate significantly higher rates of PTSD (72-100%) than studies of children who were abused (21-55%). This finding indicates that the full impact of abuse may not be experienced until a child reaches adulthood, engages in adult relationships and responsibilities, and develops more sophisticated cognitive capabilities.

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Patient Education

Children with PTSD should be encouraged to take part in their own treatment. They need to understand why treatment is required and that their difficulties are the result of traumatic events.

For patient education resources, see the Mental Health Center and the Children's Health Center, as well as Post-traumatic Stress Disorder (PTSD), Child Abuse, and Sexual Assault.

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Presentation

History

Assessment of posttraumatic stress disorder (PTSD) begins with clinical interviews of the child and the caregiver. The interviewer should be aware that caregivers may also be involved in abuse.

For many reasons, the traumatic experience itself is not openly discussed. Parents may be unaware of or in denial of the traumatic event, and children may be afraid to disclose what happened to them. Clinicians should be aware that children are just as much at risk of victimization from people they know as they are from strangers.

The caregiver interview with should elicit the child's developmental history, family history, the abuse history (if known), and the caregiver's perception of what has changed in the child since the traumatic event.

The symptoms of PTSD can be subtle and may resemble those of other psychiatric and behavioral disorders. Children who have experienced trauma may exhibit sleep difficulties, attention deficit disorders, aggressive and defiant behavior (leading to the misdiagnosis of a conduct disorder), anxiety symptoms, phobias, and social avoidance, as well as depression, agitation, or learning difficulties.

As noted (see Overview), a formal diagnosis of PTSD requires that symptoms persist for more than 1 month (similar symptoms of less than 1 month's duration may meet the criteria for acute stress disorder [ASD]). The most common symptoms of PTSD include the following:

- Reexperiencing the trauma
- Symptoms of avoidance of memories or situations that remind the child of the traumatic event
- Sleep problems
- Emotional numbing
- Sense of foreshortened future
- Dissociation
- Symptoms of increased arousal and hypervigilance
- Altered cognitive function
- Behavioral inhibition
- Regression
- Suicidal ideation (for abuse)
- Difficulties with physical contact (for abuse)

Children may reexperience traumatic events in various ways, such as the following:

- Flashbacks and memories - These may be intrusive and may interfere with function at home or school; in children, intrusive memories are more common than flashbacks, though flashbacks may be more common in children who have depression in addition to PTSD; flashbacks are vivid experiences that include visual and auditory elements from the trauma, potentially causing the child to feel as if the trauma is happening all over again and triggering an intense fear
- Behavioral reenactment - Children may act out aggressively toward others or do and say things that they witnessed; they are often unaware that this behavior is connected to their abuse
- Reenactment through play - The child may represent the traumatic experience through repetitive play—for example, by repeatedly playing exactly the same scene of people fighting, a car crashing, or a house burning down

As a means of avoiding painful memories or situations, children may exhibit a general restriction in daily activities (eg, staying away from activities that could prompt excitement or fear) or may present with specific fears. They may lose previously acquired skills and show regression.

Children or adolescents with PTSD generally avoid thinking or talking about topics that could remind them of traumatic experiences; some, especially young children, may refuse outright to acknowledge that the abuse occurred. Children may react to and attempt to avoid stimuli that trigger memories of the abuse. Common triggers include phrases, songs, scenes on television, a perfume, or a person's appearance; anniversaries, dates, and places may also trigger memories.

Sleep problems are frequently noted. The child may find it very hard to fall asleep, may exhibit pronounced fear of the dark, or may be reluctant to sleep alone. Many fears are experienced at night, such as imagining faces on the wall or eyes looking at the child. Many sleep disruptions, frequent nightmares, and awakenings at night can occur. Nightmares are common in children with PTSD. They may directly relate to the abuse or, more commonly, may consist of frightening dreams with more generalized themes.

Children with PTSD may have difficulty in managing physical contact, either because they have a heightened sense of vulnerability or because the contact serves as a reminder of abuse.

To manage difficult reactions to abuse, children with PTSD may have to suppress memories and almost all emotional reactions. As a result, these children may seem emotionally numb. Normal human interactions appear not to resonate with them; they laugh less and show less human connection and empathy.

PTSD is associated with a sense of pessimism about the future, with affected people occasionally feeling that there is no future for them. In children, this pessimism may be manifested as a belief that they will never become adults or as a lack of interest in planning for the future.

Dissociative episodes are periods of disconnection from the external environment. A dissociating child may appear to be absent and unresponsive for a few minutes. Events that remind the child of danger or threat may trigger these episodes. Children who experience dissociation soon after the disclosure of abuse are at significantly increased risk for developing PTSD. Some believe that this is because dissociation inhibits appropriate experiencing and expression of children's emotions concerning the abuse.

Children exhibiting increased arousal and hypervigilance may appear on edge, noticing small changes in the environment and closely tracking the behaviors of others. They may exhibit an increased startle response.

Cognitive function is commonly affected. A small study of neuropsychologic function in children with PTSD found deficits in sustained attention, problem solving, and abstract reasoning.

Some children with PTSD are inhibited with respect to behavior and are overly pleasing and attentive to their caregivers. This is particularly likely to be the case if a child has reason to fear that angering or disappointing the caregiver can trigger a negative encounter.

In younger children, traumatic events, particularly long-standing trauma or high-stress living conditions, are more likely to delay development in several important domains, such as reciprocity, relatedness, cognitive abilities, and adaptive behavior in general. Traumatized children may appear almost autistic and may experience great difficulties with learning.

Physical Examination

No specific physical signs of PTSD exist. The pediatrician may suspect PTSD in a child who is excessively frightened of being touched or approached by the doctor. When this circumstance arises, an inquiry should be made into the child's history of traumatic experiences. In the case of physical or sexual abuse, the physician may detect the associated physical signs (see Physical Child Abuse and Child Sexual Abuse). Only a small minority of sexually abused children have physical evidence of abuse.

The lack of specificity notwithstanding, numerous physical findings have been noted in children with PTSD; however, it is not clear whether these findings are due to PTSD, to predisposing factors, or to comorbid problems (eg, substance abuse). Findings include the following:

- Hippocampal volume is smaller in individuals with PTSD[24]
- Areas of the brain that are involved in threat perception (eg, amygdala) have altered metabolism in adult trauma survivors with PTSD
- Activity of the anterior cingulate (an area of the brain that inhibits the amygdala and other brain regions involved in the fear response) is decreased in people with PTSD
- Basal cortisol levels are low

- Cortisol response to dexamethasone is increased
- Concentration of glucocorticoid receptors and, possibly, glucocorticoid receptor activity in the hippocampus are increased

Some studies have shown that children who have been abused have higher cortisol levels than control subjects do. Studies also indicate that adults with PTSD who were abused as children have higher cortisol levels than those who were abused and did not develop PTSD. Some research evidence indicates that girls who have been sexually abused have increased catecholamine activity. Trauma survivors have pituitary adrenocortical hyperresponsivity to stress. PTSD leads to increased pulse, blood pressure, muscle tension, and skin resistance.

A problem with the research is that changes in physiologic measures, such as heart rate and skin conductance, often appear to be the same in individuals with current PTSD and those with prior PTSD. This finding indicates that the changes may represent either a predisposition or a permanent change resulting from PTSD (eg, a trait rather than a state).

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Complications

Children who are exposed to abuse and neglect are at an increased risk for psychiatric complications. For example, sexually abused children are 4 times more likely to develop psychiatric disorders. PTSD diagnosis in children correlates significantly with at least transient suicidal ideation. The following complications are noted:

- Anxiety and phobia - Approximately 30% of children with PTSD develop social anxiety or specific phobia
- Major depression and dysthymia - As many as 40% of children with PTSD develop major depression by age 18 years (compared with 8% of their unaffected peers)
- Aggression - Research findings are mixed as to whether children with PTSD are at increased risk for aggressive or oppositional behaviors
- Substance abuse and dependence - An estimated 46% of children with PTSD develop alcohol dependence, and 25% develop drug dependence
- Attention deficit hyperactivity disorder (ADHD) - The documented incidence of ADHD is higher in those with PTSD
- Suicide - People with PTSD have a higher risk of suicidal ideation, as well as an increased rate of death associated with suicide
- Physical comorbidities - In female children and adolescents, PTSD is associated with chronic fatigue, fibromyalgia, irritable bowel syndrome, chronic pelvic pain, and dysmenorrhea

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Diagnostic Considerations

Differential Diagnoses

- Acute Stress Reaction
- Adjustment Disorders
- Attention Deficit Hyperactivity Disorder (ADHD)
- Conduct Disorder
- Oppositional Defiant Disorder
- Pediatric Bipolar Affective Disorder

- Pediatric Depression
- Pediatric Panic Disorder
- Pediatric Social Phobia and Selective Mutism
- Pediatric Specific Phobia
- Postconcussion Syndrome
- Separation Anxiety and School Refusal

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Workup

Workup

Approach Considerations

There are no specific laboratory studies that establish the diagnosis of posttraumatic stress disorder (PTSD). Research has demonstrated exaggerated hypothalamic-pituitary-adrenal axis activity and increased overall adrenergic activity in acute PTSD; however, this observation is not used for diagnostic purposes clinical settings.

In addition, there are no specific imaging studies that establish the diagnosis of PTSD; however, in the case of physical abuse or torture, the corresponding physical signs, such as old fractures, may be discovered. (See Physical Child Abuse and Child Sexual Abuse.)

Numerous psychological tests may be helpful in PTSD; some are directly designed to evaluate for PTSD symptoms, and others are designed to examine symptoms of related disorders.

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Psychological Tests

Several psychometric measures, such as semistructured interviews or self-report measures, are used to evaluate PTSD in children. These psychometric measures include the following:

- Child and Adolescent Psychiatric Assessment: Life Events Section and PTSD Module (CAPA-PTSD)
- Children's PTSD Inventory (CPTSDI)
- Child PTSD Symptom Scale (CPSS)[25]
- Abbreviated UCLA PTSD Reaction Index
- Trauma Symptom Checklist for Children (TSCC)
- Impact of Events Scale
- Screen for Child Anxiety Related Disorders (SCARED)

The following tests may also be helpful:

- Beck Depression Inventory
- Mississippi Scale for Combat-Related PTSD

Both children and adults with PTSD symptoms who do not meet the specific criteria for PTSD diagnosis still suffer impairment, and it may not be significantly less than someone who fulfills all of the criteria.

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Treatment

Approach Considerations

Children need to feel safe before therapy can begin.

Adults often make invalidating and minimizing statements to traumatized children. Doing this is harmful.

Psychological and Behavioral Interventions

Psychological First Aid is an evidence-informed approach for assisting children, adolescents, adults, and families in the aftermath of disaster and terrorism. It involves: providing for basic needs (shelter, food, warmth); providing support, comfort, and reassurance; problem solving; and letting children know their reactions are normal. Invalidation should be avoided. False beliefs, such as that the child was at fault, should be addressed immediately.

Trauma-focused cognitive-behavioral therapy (TFCBT) has the strongest evidence for effectiveness.[26] Dialectical behavior therapy (DBT), helping children and adolescents to deal with painful feelings, may be necessary before CBT can be done. Eye Movement Desensitization and Reprocessing (EMDR) has also been found to be helpful. If symptoms persist or additional control is needed, pharmacologic therapy may be warranted. Inpatient psychiatric care should be considered in patients who are at risk of harming themselves or others. Children with PTSD are at increased risk for suicide.

Formal debriefing sessions create risk of harm, with victims flooding each other with their fears and memories. Children should not be pressured to talk about their painful memories either individually or in groups. When children feel safer and calmer, recounting what occurred and how it has affected them is generally therapeutic.

The first step in psychotherapy for PTSD is to help the child feel safe and nurtured and deal with false beliefs such as the child was at fault. Providing for the child's basic needs and creating an environment in which the child feels safe is crucial. Relaxation training and medication may be helpful in enabling the child to do this.

In younger children, play provides an opportunity to work through the trauma. However, play often breaks down in PTSD, and repetitive reenactment that is not enjoyable may be observed. If this occurs, intervention may be necessary.[27]

It is important to destigmatize the child’s symptoms in the eyes of both the child and the parents. They must be helped to understand that the repeated recollections, numbing, and hyperarousal are all natural responses to the experience of a traumatic event, not signs of serious mental illness or weakness.

Attention must be given to the multiple emotional and behavioral problems that can arise (eg, depression, anxiety, impulsive behavior, substance abuse, aggression, eating disorders, sexual acting out, labile mood, rage, panic attacks, and dissociation). Treatment of these problems may involve psychotherapy, medication, or both.

A major problem associated with PTSD in children is that the anxiety and other problems that develop interfere with a child’s ability to participate in the normal developmental experiences of childhood. The child often finds schoolwork and socializing difficult. As a result, serious secondary problems arise. Supportive therapy is needed to help keep a child on track or to get the child back on track.

The ability of the parents to remain as calm and as connected to the child as possible is crucial to the child’s ability to resolve PTSD. In particular, the parents should avoid contaminating the child with their own painful feelings and verbalizing the fear that the child is permanently damaged.

Cognitive-behavioral therapy

On the basis of empiric evidence, CBT, especially trauma-focused CBT (TF-CBT), appears to be the most efficacious of the available treatments. A 2013 review of 14 studies with a total of 758 participants found fair evidence that psychological therapies, particularly CBT, could treat PTSD effectively in children and adolescents for up to 1 month after treatment but reached no firm conclusions regarding longer-term therapy or the comparative efficacy of the various different psychological therapies.[28]

TF-CBT is a highly structured therapy that consists of a series of manual-based sessions (typically, 10-18 sessions lasting 1 hour each). The intervention focuses on stress management, education about symptoms, creating a narrative of the trauma (as a means of exposure), and cognitive reprocessing of the trauma and resultant symptoms.

TF-CBT seems to help children with both acute and chronic PTSD with PTSD symptoms, as well as those with depression, shame, social skills, and behavioral disturbances. The improvements have been shown to persist for at least 2 years after treatment. The results of a randomized, controlled trial indicated that community-provided TF-CBT successfully alleviated PTSD and anxiety in children exposed to intimate partner violence.[29]

Preliminary findings suggest that after a disaster involving many children, a school-based cognitive-behavioral 10-session intervention carried out by trained school-based mental health counselors significantly decreases future PTSD symptoms.

Other therapies

Other relaxation techniques (eg, biofeedback, yoga, deep relaxation, self-hypnosis, or meditation) may be suitable in some children, but clinical evidence concerning their efficacy or use is unavailable.

Interventions with caregivers

Involving caregivers in treatment has been effective, particularly in reducing the child's comorbid depressive symptoms and improving the caregiver's own depressed mood, abuse-related distress, and ability to support the child.

Caregivers and parents must be aware of the symptoms of PTSD, including triggered memories, reenactment, and hyperarousal symptoms (eg, sleep and appetite disruption, mood dysregulation, and exaggerated startle response). Caregivers should be instructed about the significance of these symptoms, which may warrant medical and psychological treatment.

Pharmacologic Therapy

In children who have persistent symptoms despite CBT or who need additional help with control of symptoms, pharmacologic treatment may be considered. When pharmacotherapy is undertaken, target symptoms such as insomnia, irritability, and agitation should be defined and monitored for response.

Antidepressants

No large-scale randomized clinical trials are available to guide choices for the treatment of PTSD in children. Clinical experience suggests that selective serotonin reuptake inhibitors (SSRIs)—a proven therapy for PTSD in adults—are helpful. These agents are considered the medications of choice for managing anxiety, depression, avoidance behavior, and intrusive recollections.

The 2 SSRIs that have been approved by the US Food and Drug Administration (FDA) for treatment of PTSD in adults are sertraline and paroxetine. Currently, no SSRIs are FDA-approved for the treatment of PTSD in the pediatric population.

Although SSRIs have not been evaluated for efficacy in children with PTSD in randomized clinical trials, they are believed to improve social and occupational functioning and to decrease core PTSD symptoms, such as avoidance, numbing, and dissociation. They have the added benefit of treating comorbid conditions. However, using SSRIs for the treatment of PTSD in the pediatric population would be an off-label use.

SSRIs do not carry the risk of cardiac arrhythmia associated with tricyclic antidepressants (TCAs). One randomized trial of imipramine and chloral hydrate proved imipramine to be efficacious in reducing PTSD symptoms in children. However, the risk of arrhythmia makes the use of TCAs problematic and is especially pertinent in cases of overdose. Suicide risk must always be considered in the treatment of a child or adolescent with mood disorder.

Special concerns in children

Physicians are advised to be aware of the following information and to use appropriate caution when considering treatment with SSRIs in the pediatric population. Informed consent regarding the FDA black box warning concerning the risk of suicidality must be obtained.

- In December 2003, the UK Medicines and Healthcare Products Regulatory Agency (MHRA) issued an advisory that most SSRIs are not suitable for use in persons younger than 18 years for treatment of depressive illness; after review, the agency decided that the risks SSRIs pose to pediatric patients outweighed the benefits of treatment, except for fluoxetine, which appears to have a positive risk-benefit ratio in the treatment of depressive illness in patients younger than 18 years
- In October 2003, the FDA issued a public health advisory regarding reports of suicidality in pediatric patients treated with antidepressants for major depressive disorder; the advisory reported suicidality (both ideation and attempts) in clinical trials of various antidepressant drugs in pediatric patients, and the FDA asked that additional studies be performed because suicidality occurred in both treated and untreated patients with major depression and thus could not be definitively linked to drug treatment

However, a study of more than 65,000 children and adults treated for depression between 1992 and 2002 by the Group Health Cooperative in Seattle found that suicide risk declined, rather than rose, with the use of antidepressants.[30] .

Numerous authors have addressed the controversy concerning when and how to use SSRIs in children. In 2007, Cuffe summarized the literature in an update available from the American Academy of Child Adolescent Psychiatry.[31] When SSRIs are used, consultation with a child psychiatrist and close monitoring for suicidal ideation are important.

If the decision has been made to use an SSRI in a child and appropriate informed consent (including information about the FDA black box warning concerning suicidality) has been obtained, the agent should be started at a low dose, with gradual dose escalation. Specific dosing depends on the medication and the age and weight of the child. Adverse effects of SSRIs include anxiety or agitation, behavioral activation, hypomania, headaches, hyperhidrosis, somnolence, gastrointestinal upset, diarrhea, and anorexia.

Other agents

Additional pharmacologic agents have been used clinically to treat PTSD symptoms in children and adolescents; however, the evidence supporting the use of these agents is not as robust as that supporting the use of antidepressants.

Beta-blockers and alpha-adrenergic agonists (eg, guanfacine[32] and clonidine) are helpful in reducing arousal, decreasing forced reexperiencing of the trauma, and avoiding the neurophysiologic kindling that can contribute to chronic illness. These medications are most helpful if used very soon after the onset of symptoms.

Mood stabilizers can be helpful in dealing with increased arousal, impulsivity, and already established kindling once the illness has become chronic. The mood stabilizers are not interchangeable: Carbamazepine may ameliorate persistent reexperiencing of the event, whereas valproic acid may ameliorate symptoms of avoidance.

Compared with the aforementioned medications, atypical antipsychotics are infrequently used. They should be considered only when the patient is unresponsive to other medications or when marked agitation or psychosis is present.

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Consultations

Consultation with therapists and child psychiatrists with particular expertise in the treatment of PTSD in children is generally warranted.

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Long-Term Monitoring

Most of the treatment of psychologically traumatized children is conducted on an outpatient basis. Monitoring and educating the child and parents is important because symptoms may recur even after resolution, especially during new developmental stages. The impact on self image and views of the world are especially persistent.

In addition to treatment of the presenting diagnostic symptoms (eg, reexperiencing, avoidance, changes in cognition, and hyperarousal/reactivity), children with PTSD require treatment of all associated problems (eg, depression, anxiety, and destructive acting out) and ongoing support of participation in the normal developmental experiences of childhood.

Long-term educational support and social skills training may be needed on a remedial basis to help a child gain the skills that were not developed during a period of months or years of withdrawal, especially if PTSD is not effectively treated shortly after the incident.

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Medication

Medication Summary

Current research indicates that SSRIs, prazosin, and propranolol may be helpful in the treatment of PTSD in adults. Benzodiazepines are often used, but present significant risks especially to the elderly, individuals with comorbid substance abuse histories, and those with traumatic brain injury. The author is not aware of sufficient research on medication for PTSD in children to justify their use specifically for PTSD symptoms in this population. As children move through adolescence and become more like adults, consideration of medications used in adults for PTSD is a reasonable option.

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Contributor Information and Disclosures

Author

Roy H Lubit, MD, PhD Private Practice

Roy H Lubit, MD, PhD is a member of the following medical societies: American Academy of Child and Adolescent Psychiatry

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Coauthor(s)

Eileen R Giardino, RN, MSN, PhD, ANP-BC, FNP-BC Associate Professor of Nursing, Department of Family Nursing, University of Texas Health Sciences Center Houston, School of Nursing

Eileen R Giardino, RN, MSN, PhD, ANP-BC, FNP-BC is a member of the following medical societies: American Association of Nurse Practitioners, American College Health Association, American Nurses Association, American Professional Society on the Abuse of Children, International Society for the Prevention of Child Abuse and Neglect

Disclosure: Nothing to disclose.

Specialty Editor Board

Mary L Windle, PharmD Adjunct Associate Professor, University of Nebraska Medical Center College of Pharmacy; Editor-in-Chief, Medscape Drug Reference

Disclosure: Nothing to disclose.

Chief Editor

Caroly Pataki, MD Health Sciences Clinical Professor of Psychiatry and Biobehavioral Sciences, University of California, Los Angeles, David Geffen School of Medicine

Caroly Pataki, MD is a member of the following medical societies: American Academy of Child and Adolescent Psychiatry, New York Academy of Sciences, Physicians for Social Responsibility

Disclosure: Nothing to disclose.

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Carol Diane Berkowitz, MD Executive Vice Chair, Department of Pediatrics, Professor, Harbor-University of California at Los Angeles Medical Center

Carol Diane Berkowitz, MD is a member of the following medical societies: Alpha Omega Alpha, Ambulatory Pediatric Association, American Academy of Pediatrics, American College of Emergency Physicians, American Medical Association, American Pediatric Society, and North American Society for Pediatric and Adolescent Gynecology

Disclosure: Nothing to disclose.

Angelo P Giardino, MD, PhD, MPH Associate Professor, Baylor College of Medicine; Chief Medical Officer, Texas Children's Health Plan; Chief Quality Officer, Medicine, Texas Children's Hospital

Angelo P Giardino, MD, PhD, MPH is a member of the following medical societies: Academic Pediatric Association, American Academy of Pediatrics, American Professional Society on the Abuse of Children, Harris County Medical Society, Helfer Society, and International Society for Prevention of Child Abuse and Neglect

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Eileen R Giardino, RN, MSN, PhD, FNP-BC, ANP-BC Associate Professor of Nursing, Department of Family Nursing, University of Texas Health Sciences Center Houston, School of Nursing

Eileen R Giardino, RN, MSN, PhD, FNP-BC, ANP-BC is a member of the following medical societies: American Academy of Nurse Practitioners, American College Health Association, American Nurses Association, American Professional Society on the Abuse of Children, and International Society for Prevention of Child Abuse and Neglect

Disclosure: Nothing to disclose.

Toi Blakley Harris, MD Associate Professor, Psychiatry & Pediatrics, and Assistant Dean, Student Affairs & Diversity Baylor College of Medicine; Founder and Director, Texas Regional Psychiatry Minority Mentor Network

Toi Blakley Harris, MD, is a member of the following medical societies: American Academy of Child and Adolescent Psychiatry, American Psychiatric Association, and Association for Academic Psychiatry

Disclosure: Nothing to disclose.

Mary L Windle, PharmD Adjunct Associate Professor, University of Nebraska Medical Center College of Pharmacy; Editor-in-Chief, Medscape Drug Reference

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