Posttraumatic stress disorder in children and adolescents: Treatment overview

AUTHORS: Jeffrey Strawn, MD, Brooks Keeshin, MD, Judith A Cohen, MD
SECTION EDITOR: David Brent, MD
DEPUTY EDITOR: Michael Friedman, MD

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INTRODUCTION

Posttraumatic stress disorder (PTSD) in children and adolescents is a severe, often chronic, and impairing mental disorder. PTSD is seen in some individuals after exposure to traumatic experiences involving actual or threatened injury to themselves or others. Traumatic experiences leading to PTSD can include interpersonal violence, accidents, natural disasters, and injuries.

PTSD is characterized by intrusive thoughts and reminders of the traumatic experience(s), avoidance of trauma reminders, negative mood and cognitions related to the traumatic experience(s), and physiological hyperarousal that lead to significant social, school, and interpersonal problems [1]. PTSD can occur in toddlers as young as age one to two years [2-4]. The consequences of PTSD include elevated risk for other mental disorders and suicide, substantial impairment in role functioning, reduced social and economic opportunity, and earlier onset of chronic diseases, particularly cardiovascular disease.

This topic addresses the treatment decisions and subsequent management of PTSD in children and adolescents. Psychosocial interventions for PTSD in children and adolescents are discussed elsewhere as are the epidemiology, pathogenesis, clinical manifestations, and course of PTSD in children and adolescents. Topics related to PTSD in adults are found separately.

The associated algorithms discuss our treatment choices for PTSD in children and adolescents (algorithm 1 and algorithm 2).

- (See "Posttraumatic stress disorder in children and adolescents: Epidemiology, clinical features, assessment, and diagnosis".)
- (See "Posttraumatic stress disorder in children and adolescents: Trauma-focused psychotherapy".)
- (See "Posttraumatic stress disorder in adults: Epidemiology, pathophysiology, clinical features, assessment, and diagnosis".)
- (See "Acute stress disorder in adults: Epidemiology, clinical features, assessment, and diagnosis".)
- (See "Dissociative aspects of posttraumatic stress disorder: Epidemiology, clinical manifestations, assessment, and diagnosis".)

INITIAL TREATMENT

Trauma-focused psychotherapy: First line for most — Our preferred first-line treatment for most children and adolescents with posttraumatic stress disorder (PTSD) is with trauma-focused psychotherapy (eg, trauma-focused cognitive-behavioral therapy) rather than other psychotherapies or medication management.

Our preference is based on trials showing efficacy for trauma-focused therapies [5-13], limited efficacy for antidepressants and other medications [14-20], and our clinical experience.

In contrast to the efficacy of selective serotonin reuptake inhibitors (SSRIs) in the treatment of PTSD symptoms in adults, SSRIs do not appear to be efficacious in the treatment of PTSD in children or adolescents. Randomized trials have found treatment with SSRIs to have similar effects on PTSD symptom reduction [14-16] or prevention [17] as compared with placebo. For example, in a randomized trial of 131 children or adolescents (age 6 to 17 years) with PTSD, improvement of PTSD symptoms (as measured by the University of California, Los Angeles [UCLA] PTSD scale-I) were similar after 10 weeks of therapy with sertraline versus placebo [14]. Similar response to sertraline as compared with placebo in children and adolescents with PTSD has been found in another trial [15].

Further discussion of trauma-focused therapy for PTSD in children and adolescents, including types of trauma-focused therapy, choosing trauma-focused therapy, administration, and efficacy of trauma-focused therapy, can be found elsewhere. (See "Posttraumatic stress disorder

in children and adolescents: Trauma-focused psychotherapy", section on 'Trauma-focused psychotherapy as preferred treatment'.)

Pharmacologic management: For severe symptoms — We use pharmacologic management as the alternative initial treatment when symptom severity precludes the use of trauma-focused psychotherapy or requires immediate stabilization. In cases where the safety of the individual cannot be maintained at home, we involve the parent/caregiver and consider hospitalization. (See "Suicidal ideation and behavior in children and adolescents: Evaluation and management".)

ADDRESSING PTSD SYMPTOMS AND COMORBIDITIES

We use pharmacologic augmentation when posttraumatic stress disorder (PTSD) symptoms such as sleep disruption/dyssomnia, intrusive recollections, hyperarousal, or reactive behaviors (eg, aggression, outbursts) persist despite trauma-focused cognitive-behavioral therapy (TF-CBT) (algorithm 2).

Sleep disruption/dyssomnia — For individuals that have persistent sleep disturbance (eg, difficulty falling asleep, nightmares, frequent awakening) that limits the response to psychotherapy or causes psychosocial disruption, we augment trauma-focused therapy with the alpha$_1$ adrenergic antagonist, prazosin. Medications that centrally modulate noradrenergic tone appear to be efficacious for PTSD-related dyssomnias in youth [20-30]. In our clinical experience, improving the child's sleep can greatly improve daytime functioning, reduce daytime PTSD symptoms, and increase the child's ability to engage in evidence-based trauma psychotherapy.

Due to concern for first-dose hypotension, we begin prazosin at 1 mg given 30 minutes before bedtime. We increase by 1 mg every three to four days for the first two weeks, with a clinical re-evaluation once the patient is at 2 or 3 mg. In children under six or in those with side effects (eg, nausea, dizziness) we start at a 0.5 mg and titrate weekly as more gradual titration minimizes orthostatic side effects. We increase the dose until nightmares and overall quality of sleep have significantly improved, which generally occurs at a dose between 2 and 5 mg, and then monitor PTSD, anxiety and depression symptoms over the course of four to eight weeks prior to making further decision about pharmacotherapy. We monitor blood pressure and pulse (sitting and standing) at baseline and at each follow-up appointment. If morning dizziness or other orthostatic symptoms are present, we administer the medication 30 to 60 minutes earlier in the evening. If symptoms persist, we decrease the dose in 1 mg increments until tolerated.

In a case series of 34 children with PTSD, treatment with prazosin was associated with improvement in PTSD symptoms (as measured on the UCLA PTSD Reaction Index) including sleep subscale scores, intrusive thoughts, negative cognition and mood, and hyperarousal [25]. Most youth responded to doses of ≤5 mg, with approximately a third of youth, primarily adolescents, requiring more than 5 mg/day [25].

Furthermore, in adults, prazosin has been found to be efficacious and generally well tolerated at dose ranges of 10 to 15 mg at night in the treatment of PTSD-associated sleep disturbances (trouble falling/staying asleep, nightmares) [31-35].

For individuals who do not respond to prazosin or are intolerant we use an alpha$_2$ adrenergic agonist such as clonidine or guanfacine as described in the next section.

Hyperarousal, intrusive recollections, and reactive behaviors — TF-CBT improves reactive behaviors in children and adolescents with PTSD that are driven by persistent hyperarousal and intrusive symptoms. Additionally, improvement in sleep can dramatically increase the patient's ability to cope with daytime trauma symptoms. For children or adolescents with persistent and functionally impairing daytime symptoms of PTSD (eg, hyperarousal, intrusive recollections, or other reactive behaviors [PTSD-related aggression, outbursts]) that are not responsive to TF-CBT and/or sleep interventions, we prefer pharmacologic augmentation with a noradrenergic modulator, such as clonidine or guanfacine. We do not recommend the use of multiple noradrenergic modulator agents in the same patient.

In our experience, these medications are well tolerated. The most common side effects include dry mouth and sedation [20].

- **Guanfacine** – We typically begin guanfacine (extended release) at 1 mg each evening and increased by 1 mg each week until effective. Recommended target dose range is 0.08 to 0.12 mg/kg/day.

  In an uncontrolled trial, 19 children (age 6 to 18 years) with symptoms of PTSD were treated with extended-release guanfacine 1 to 4 mg each evening (mean dose 1.19 mg/0.03 mg/kg) [36]. At eight weeks, reductions in re-experiencing, avoidant, and hyperarousal as measured by the UCLA PTSD Reaction Index were reported.

- **Clonidine** – We typically start at 0.05 to 0.1 mg at night, increase by 0.05 to 0.1 mg every three nights to a maximum dose of 0.2 to 0.5 mg/day.

Combined modality for co-occurring anxiety and/or depression — For children or adolescents with PTSD and co-occurring anxiety or depression that does not improve with TF-

CBT, or in cases where the onset of the depression or anxiety clearly predates the trauma, we typically augment TF-CBT with a selective serotonin reuptake inhibitor (SSRI).

Co-occurring anxiety or depression are commonly seen in individuals with PTSD. Although studies demonstrate that TF-CBT improves depressive symptoms among individual with PTSD receiving TF-CBT [37], not all youth will experience remission of depression or anxiety during trauma treatment, especially youth with persistent, comorbid generalized anxiety disorder.

Our preference for SSRIs is based on efficacy in depressive and anxiety in children and adolescents [38-41]. Initiation, titration, dose, and side effects of antidepressants in the treatment of depression or anxiety in children/adolescents is discussed elsewhere. (See "Pediatric unipolar depression and pharmacotherapy: Choosing a medication", section on 'Choice of medication for acute treatment' and "Pharmacotherapy for anxiety disorders in children and adolescents".)

SUBSEQUENT MANAGEMENT

Monitoring treatment response — We typically monitor children's responses to treatment through child self-reported ratings such as the Pediatric Traumatic Stress Screening Tool, that has been widely used in primary care and is an adapted form of the validated UCLA PTSD Reaction Index Brief Screen. A full version of the UCLA PTSD Reaction Index is available and helpful for assessment and monitoring in mental health settings. Other options include the Child PTSD Symptom Scale or the Child and Adolescent Trauma Screen-2 (for children age 7 to 17 years). For younger children (ie, <7 years old), we use the parent-reported instrument Young Child PTSD Checklist. We administer these at pretreatment and after each treatment phase. Clinically significant improvement (eg, from the very severe to moderate range; or from the severe to mild range using the norms established on the respective instrument; or a decrease in score of >40 percent) defines response.

Robust response

- **Ongoing/maintenance psychotherapy** – For children or adolescents with robust response to treatment (either psychosocial intervention or combination treatment), we encourage ongoing implementation of the skills learned during therapy. This is particularly true regarding response to reminders of trauma which can prompt symptom recurrence. We encourage booster psychotherapy sessions if symptoms recur.

- **Duration of pharmacotherapy** – We review the risk and benefit of ongoing treatment and, working with the patient and parent/caregiver, weigh this against the risk and benefit

of tapering medication. For those that we agree to taper off of medications (eg, favorable response, no recurrence of symptoms, no prior recurrence of symptoms with taper), we taper most medications slowly and generally over a period three to four months during or towards the end of the trauma therapy [42]. Prazosin can generally be stopped without a taper, although some families may prefer to more slowly wean off the medication. In contrast, when pharmacologic management of comorbid anxiety or depression has been effective, we continue it for a minimum of nine months to one year [43].

Limited or minimal response

Confirm diagnosis, address stressors, optimize psychotherapy — In individuals with limited or no response to psychotherapy, our next steps are to review the diagnosis, address factors that may be limiting response to treatment, and optimize psychotherapy.

- **Review diagnosis and address co-occurring disorders** – Disorders such as depression, generalized anxiety disorder, substance use disorders, and obsessive-compulsive disorder often co-occur with chronic posttraumatic stress disorder (PTSD). We do not consider PTSD to be nonresponsive to treatment until the after the comorbid disorder is adequately treated. (See 'Combined modality for co-occurring anxiety and/or depression' above and "Posttraumatic stress disorder in children and adolescents: Trauma-focused psychotherapy", section on 'Children with co-occurring conditions'.)

  - **Complex PTSD** – Poor or delayed response to trauma-focused psychotherapy may suggest the presence of complex PTSD. In these cases, we typically provide somewhat lengthier treatment, with a longer initial stabilization phase.

    Complex PTSD is not included in the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision (DSM-5-TR) but is described in the International Classification of Diseases, 11th Revision (ICD-11). Complex PTSD differs from noncomplex PTSD in the subject's history of chronic trauma and, in addition to core PTSD features, the presence of prominent features of affective dysregulation, negative self-concept and interpersonal disturbances [44-49]. Most treatments with efficacy for child PTSD have been successfully applied to the subgroup with complex trauma [50]. Other treatments have been developed specifically for these youth [51-53]. Further discussion of treatment of teens with complex PTSD can be found elsewhere. (See "Posttraumatic stress disorder in children and adolescents: Trauma-focused psychotherapy", section on 'Teens with complex PTSD' and "Dissociative aspects of posttraumatic stress disorder: Epidemiology, clinical manifestations, assessment, and diagnosis".)

- **Address stressors such as ongoing trauma or other environmental factors** – Symptoms of PTSD may persist despite appropriate treatment when trauma recurs during the treatment. Adaptive trauma responses such as increased vigilance, increased focus on safety, differentiating between real danger and trauma reminders, and helping nonoffending parents/caregivers to collaborate with children to develop additional strategies for enhancing safety may be effective in reducing PTSD and other comorbid symptoms [8,54].

  Many features of a traumatized child's daily life (eg, family, health, educational, community, faith, legal, and child welfare) are likely to influence treatment response [55]. Examples include changes in foster family placement or the arrest/incarceration or illness/death of a family member. Secondary adversities, losses and other significant stressors emphasize the critical importance of working collaboratively with parents/caregivers to be proactively aware of potential changes that may occur in the child's life and address perceived or real threats to the child's safety that may occur as a result of these changes.

- **Optimize psychotherapy** – We pay particular attention to treatment fidelity and review trauma reminders.

  - **Treatment fidelity** – We recommend appropriate training and supervision for all treatment providers utilizing trauma-focused psychotherapy. Treatment nonresponse may occur when the core treatment components are provided incorrectly or not at all.

  - **Trauma reminders** – We review trauma reminders or triggers, develop different coping strategies for these triggers, and help the child to master the coping strategies identified (eg, during in-session practice). (See "Posttraumatic stress disorder in children and adolescents: Trauma-focused psychotherapy", section on 'Administering TF-CBT'.)

Changes to psychotherapy — After addressing the above factors, if limited or no response persists, we make changes to the psychotherapy. This includes tailoring the psychotherapy to address the child's specific symptoms and then, if needed, changing to another trauma-focused therapy. (See "Posttraumatic stress disorder in children and adolescents: Trauma-focused psychotherapy".)

The associated algorithm discusses our selection of trauma-focused psychotherapy for the treatment of PTSD in children and adolescents (algorithm 2).

- **Tailoring the psychotherapy** – We tailor the psychotherapy to address the child's specific PTSD symptoms, for example:
  - We focus the therapy on parenting skills and behavioral regulation skills for hyperarousal symptoms (eg, angry outbursts, irritability, and sleep disturbance).
  - We review the trauma narrative and cognitive processing of maladaptive cognitions, and emotional expressions for ongoing symptoms of re-experiencing, avoidance, fear, or anxiety [10,56].
- **Switching to another trauma-focused psychotherapy** – If, despite the above interventions, response to trauma-focused therapy is still minimal to none, we switch to another trauma-focused psychotherapy with empirical evidence of effect. As an example, a child who has not responded to trauma-focused group CBT may benefit from trauma-focused individual CBT [57]. (See "Posttraumatic stress disorder in children and adolescents: Trauma-focused psychotherapy", section on 'Individual trauma-focused psychotherapy' and "Posttraumatic stress disorder in children and adolescents: Trauma-focused psychotherapy", section on 'Trauma-focused group treatment'.)

Medication options — Despite some of these medications being used as second-line agents for PTSD with comorbid disorders, we do not use the following medications in the treatment of PTSD in children or adolescents until all of the interventions discussed above have been ineffective. (See 'Initial treatment' above and 'Addressing PTSD symptoms and comorbidities' above and 'Limited or minimal response' above.)

- **Antidepressants, beta blockers, antiseizure medications, glutamatergic modulators** – Limited evidence supports the use of serotonin-norepinephrine reuptake inhibitors, tricyclic antidepressants, beta-blockers, D-Cycloserine, or glutamate modulators in the treatment of PTSD in children or adolescents [16,58-63].
- **Second-generation antipsychotic medications** – We suggest against the use of second-generation antipsychotics in the treatment of PTSD in children and adolescents. Limited data (uncontrolled trials and case series) have reported mixed results on the use of second-generation antipsychotic medications in youth with PTSD symptoms, as well as high rates of side effects such as weight gain, insulin resistance, dyslipidemia (eg, hypercholesterolemia, hypertriglyceridemia), and extrapyramidal symptoms limit their use [64-66]. Children exposed to childhood trauma are at risk for chronic health problems such as childhood obesity independent of medication use [67], and thus at additional risk with second-generation antipsychotic use. (See "Second-generation antipsychotic medications: Pharmacology, administration, and side effects".)

SOCIETY GUIDELINE LINKS

Links to society and government-sponsored guidelines from selected countries and regions around the world are provided separately. (See "Society guideline links: Anxiety and trauma-related disorders in children".)

SUMMARY AND RECOMMENDATIONS

- **Introduction** – Posttraumatic stress disorder (PTSD) in children and adolescents is a severe, often chronic, mental disorder that may lead to significant school, social and interpersonal problems. Symptoms include intrusive thoughts and reminders of the traumatic experience(s), avoidance of trauma reminders, negative mood and cognitions related to the traumatic experience(s), and physiological hyperarousal. (See 'Introduction' above.)

- **Initial treatment**

  - **Trauma-focused psychotherapy** – For most children or adolescents with PTSD, we suggest trauma-focused psychotherapy rather than other forms of psychotherapy or medication management alone as initial treatment (algorithm 1) (**Grade 2C**). (See 'Trauma-focused psychotherapy: First line for most' above.)

  - **Pharmacologic management for severe symptoms** – For children or adolescents whose symptom severity precludes treatment with trauma-focused psychotherapy, or in those requiring immediate stabilization, we use pharmacologic management as an alternative initial treatment (algorithm 2). (See 'Pharmacologic management: For severe symptoms' above.)

- **Addressing PTSD symptoms and comorbidities** – We use pharmacologic augmentation when PTSD symptoms such as sleep disruption/dyssomnia, intrusive recollections, hyperarousal, or reactive behaviors (eg, aggression, outbursts) persist despite trauma-focused cognitive-behavioral therapy (TF-CBT). (See 'Addressing PTSD symptoms and comorbidities' above.)

  - **Sleep disruption/dyssomnia** – For children or adolescents with persistent dyssomnia that limits response to trauma-focused therapy, we suggest augmentation with prazosin (**Grade 2C**). (See 'Sleep disruption/dyssomnia' above.)

- **Hyperarousal, intrusive recollection, reactive behaviors** – For children or adolescents with persistent hyperarousal, intrusive recollections, or reactive behaviors (eg, aggression, outbursts) despite treatment with trauma-focused psychotherapy, we suggest augmentation with an anti-adrenergic agent such as clonidine or guanfacine (**Grade 2C**). (See 'Hyperarousal, intrusive recollections, and reactive behaviors' above.)

- **Combined modality for co-occurring anxiety or depression** – For children or adolescents with PTSD and co-occurring anxiety or depression that does not improve with TF-CBT, or in cases where the onset of the depression or anxiety clearly predates the trauma, we typically augment TF-CBT with a selective serotonin reuptake inhibitor (SSRI). (See 'Combined modality for co-occurring anxiety and/or depression' above.)

- **Subsequent management** – For limited or minimal response to initial management with psychotherapy with or without pharmacotherapy, we confirm the diagnosis, address stressors, and optimize the psychotherapy, including tailoring the psychotherapy to address specific symptoms. If symptoms persist despite these measures, we typically switch to another trauma-focused psychotherapy. (See 'Confirm diagnosis, address stressors, optimize psychotherapy' above.)

  Limited data support the use of non-SSRI antidepressants, propranolol, mood stabilizers, and glutamatergic modulators in the treatment of PTSD in children and adolescents. We do not use these or second-generation antipsychotics as part of the treatment of PTSD in children and adolescents. (See 'Medication options' above.)

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