Clinical Pediatrics

An Update on Posttraumatic Stress Disorder in Children and Adolescents

Daniel F. Connor, Julian D. Ford, Amy F. T. Arnsten and Carolyn A. Greene

Published by:
$SAGE

Additional services and information for *Clinical Pediatrics* can be found at:

Email Alerts: http://cpj.sagepub.com/cgi/alerts

Subscriptions: http://cpj.sagepub.com/subscriptions

Reprints: http://www.sagepub.com/journalsReprints.nav

Permissions: http://www.sagepub.com/journalsPermissions.nav

>> OnlineFirst Version of Record - Jul 2, 2014

What is This?

An Update on Posttraumatic Stress Disorder in Children and Adolescents

**Daniel F. Connor, MD[1], Julian D. Ford, PhD[1],
Amy F. T. Arnsten, PhD[2], and Carolyn A. Greene, PhD[1]**

Recent violent tragedies in schools, universities, and in public spaces have focused increased attention on the symptoms and consequences of maladaptive traumatic stress and posttraumatic stress disorder (PTSD) in children and adolescents. Child maltreatment and its consequences continue to be prevalent in the United States. Recent changes to diagnosis in the *Diagnostic and Statistical Manual*, 5th edition (*DSM-5*) identify new criteria for PTSD in young children as well as in school-age children and adolescents. There is a growing body of knowledge about what psychological treatments are effective in children. Pediatricians are often the first to identify and treat traumatized children.[1] An update on this topic is relevant because data show that only 18% of primary care pediatricians' self-report adequate knowledge of childhood PTSDs, and only 10% report frequent experience in the assessment and treatment of posttraumatic stress symptoms.[2]

Epidemiology and Prevalence

Exposure to traumatic stress events including physical abuse, sexual abuse, violence, witnessing violence in the home or community, severe family dysfunction/psychopathology, natural disasters, severe accidents, and/or their own or their caregivers' life-threatening illness is not uncommon in children and adolescents. Estimates from epidemiological studies range from 25% of youths experiencing at least 1 traumatic event by age 16 years[3] to more than 60% by ages 16 to 18 years in the United States and internationally.[4,5] The Centers for Disease Control and Prevention reports that in 2010 more than 740 000 children and youths were treated in hospital emergency departments as a result of violence and that more than 3 million reports of child maltreatment are received each year by state and local agencies.[6]

Toxic stress in childhood may result from intense, frequent, or prolonged activation of the body's neurobiological stress systems in the absence of the buffering protection afforded by a supportive adult caregiving relationship and may result in physiologic, behavioral, and emotional stress-related vulnerabilities to a wide variety of physical and mental illnesses throughout the lifespan.[7] Risk factors for the development of clinically significant problems include exposure to multiple types of trauma (cumulative traumatization or polyvictimization)[8] in the context of a compromised family or extrafamilial social support system (eg, chronic poverty, parental mental illness or substance abuse, interpersonal isolation or affiliation with delinquent peers, multiple out-of-home placements), when children[3] or adolescents[4] experience psychological trauma(s). As the cumulative burden of childhood adversity increases, the likelihood of developing emotional and behavioral problems that persist into adulthood increases in a dose-response manner, including vulnerability to serious medical as well as mental health disorders.[9]

Most children experience transient psychological distress following exposure to traumatic events, which may manifest in the form of distinct changes in behavior (eg, regression, irritability) and physical complaints in young children[10,11] or peritraumatic (ie, in the immediate wake of trauma exposure) states of distress, heightened arousal, or dissociation.[12]

Children with exposure to traumatic stressors may develop the syndrome of PTSD linked to a traumatic event and characterized by intrusive, avoidant, emotional numbing, and hyperarousal symptoms accompanied by pervasive negative changes in mood, cognition, and self-concept.[13] Associated symptoms may include depression, anxiety, impulsivity, aggression, hyperactivity, agitation, irritability, behavior problems, sleep difficulties, and attentional deficits that further impair daily functioning.[14,15] The reported overall lifetime prevalence of PTSD in the general youth population is 3% to 9%[16,17] and varies by gender with approximately 4% of male adolescents and 7% of female adolescents meeting full

[1]University of Connecticut School of Medicine and Health Care Center, Farmington, CT, USA
[2]Yale University School of Medicine, New Haven, CT, USA

Corresponding Author:
Daniel F. Connor, Department of Psychiatry/MC1410, University of Connecticut Medical School, 263 Farmington Avenue, Farmington, CT 06030-1410, USA.
Email: dconnor@uchc.edu

diagnostic criteria for PTSD.[4,18] The 1-month posttrauma incidence of PTSD is 15.9%.[19] Least at risk appear to be boys exposed to noninterpersonal trauma (PTSD 1-month incidence of 8.4%). Most at risk for PTSD are girls exposed to interpersonal trauma (32.9%).[19]

It is important to note that a subgroup of youngsters develop persistent symptoms of traumatic stress that often extend beyond PTSD and may be quite varied, including anxiety/fears, anhedonic/dysphoric, angry/ aggressive, and/or dissociative symptoms as well as problems with sleep, eating, concentration, substance use, sexuality (primarily following sexual trauma or interpersonal violence), reckless or avoidant behavior, self-harm, or suicidality.[20] In clinical pediatric samples, symptoms of traumatic stress have been found in approximately 90% of sexually abused children, 75% of children exposed to school violence, 50% of children who are physically abused, and in 35% of children exposed to community violence.[21] It is estimated that between 60% and 90% of children presenting for outpatient mental health treatment may have been exposed to at least 1 traumatic stressor.[21]

Trajectories of Posttraumatic Adaptation: Risk and Protective Factors

Outcomes for children after exposure to traumatic stress vary widely and often change over time. Trajectories of poor outcomes include severe initial reactions followed by persistent or episodic posttraumatic impairment (chronic PTSD) and mild to moderate initial reactions followed by severe impairment (delayed PTSD).[22] Delayed PTSD was considered rare until recent findings from prospective studies showed that as many as 2 in 10 youth, as well as adults, do not manifest clinically significant PTSD symptoms for several months or even years following initial exposure to traumatic stressors.[23]

Risk factors for chronic pediatric PTSD include *pretraumatic* psychiatric disorder, impaired caregivers/ family, poverty, low IQ, avoidant/anxious coping, and generalized arousal and negative affect, *exposure* to interpersonal traumatic stressors (eg, maltreatment, sexual assault, domestic violence) or cumulative (multiple type/polyvictimization or recurrent) traumatic stressors, *peritraumatic* distress (fear, perceived life threat, dissociation, acute PTSD), and *posttraumatic* low social support, social withdrawal, comorbid psychological problems, poor family functioning, and cognitive alterations (rumination, distraction, thought suppression, and attention bias toward threat).[4,11,20,24]

On the other hand, many children are resilient and either are relatively asymptomatic following exposure to the adverse effects of trauma and able to adapt and preserve both functioning and development (resilient) or have moderate to severe initial reactions or early-onset PTSD (ie, within 3 months of exposure) but improve and regain normative functioning over time with or without treatment (recovery).[22] Resilience in the face of exposure to traumatic or other stressors and a capacity for posttraumatic growth is facilitated by protective factors such as individual self-control and problem-solving skills, and relational and environmental factors such as good schools, safe neighborhoods, positive relationships with supportive caregivers, socioeconomic advantage, religious faith, success at school and with peer friendships, and older age at time of traumatic exposure.[17,25] Lower traumatic event frequency, number, and intensity of exposure also are important in determining resilient childhood posttraumatic outcomes. Individual capacity for adaptive resilience in the face of traumatic threat largely depends on human adaptive systems embedding the exposed child in a supportive caregiving web involving caregivers, families, friends, communities, and cultures.[26,27]

Diagnostic Criteria for PTSD

In the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM-5*), PTSD is no longer considered an anxiety disorder, but instead is included in a new chapter on trauma- and stressor-related disorders. PTSD is a psychiatric disorder in which exposure to a traumatic or stressful event is explicitly required as part of the diagnosis and characteristic symptoms follow exposure to one or more traumatic events. For children aged 7 years and older, diagnostic criteria include 4 clusters of symptoms that emerge or are exacerbated following exposure to actual or threatened death, serious injury, or sexual violence through direct experience, witnessing an event, learning of a traumatic event occurring to a close family member or friend, or exposure to aversive details of a traumatic event (see Table 1). These symptoms must occur for duration of greater than 1 month and be associated with clinical distress and impairment in functioning.

For young children, there now exist explicit PTSD criteria, which include developmentally specific manifestations of symptoms. Acute stress disorder is diagnosed when traumatic stress or dissociative symptoms begin within 3 days of trauma exposure and resolve within 1 month.[13]

Evaluation of PTSD in Children

Pediatric providers cannot practically assess every type, let alone incident, of the potentially traumatic events that

Table 1. Posttraumatic Stress Disorder (PTSD) Diagnostic Criteria.[a]

A. Exposure to traumatic event(s) that involve actual or threatened death, serious physical injury, or sexual violation in one or more of the following ways (in children <6 years, exposure to actual or threatened death, serious injury, or sexual violence):
  1. Direct exposure to self (directly experiencing the traumatic events)
  2. Witness direct exposure to others (witnessing, in person, the event(s) as it occurred to others, especially primary caregivers)
  3. Learning of exposure by a close relative or close friend (learning that the traumatic event(s) occurred to a parent or caregiving figure)
  4. Repeated exposure to gruesome details of such exposures by others
B. Intrusive reexperiencing of traumatic event(s), including the following:
  1. Unwanted memories or distress related to reminders of traumatic event(s) (recurrent, involuntary, and intrusive distressing memories of the traumatic event(s). May be expressed as play reenactment)
  2. Nightmares of traumatic events or emotional distress (includes night terrors for children)
  3. Flashbacks (experiencing traumatic events as if they were occurring in the moment; dissociative reactions in which the child feels or acts as if the traumatic event(s) were recurring. Such trauma-specific reenactment may occur in play, derealization, depersonalization)
  4. Intense or prolonged psychological distress at exposure to trauma reminders
  5. Marked physiological reactions to reminders of the traumatic event(s)
C. Avoidance of stimuli (including people, places, conversations, activities, reminders, or bodily or emotional feelings) associated with the traumatic event(s)
  1. Avoidance of internal reminders of the traumatic event(s)
  2. Avoidance of external reminders of the traumatic event(s)
D. Negative alterations in cognitions and mood associated with the trauma
  1. Difficulty recalling important aspects of traumatic event(s)
  2. Persistent belief that the world is not safe or that oneself is irreversibly harmed or ruined
  3. Persistent distorted blame of self or others for traumatic event(s)
  4. Persistent negative emotion state(s) (substantially increased frequency of negative emotional states such as fear, guilt, sadness, shame, and confusion)
  5. Emotional numbing: inability to feel or express positive emotions (markedly diminished interest or participation in significant activities, including constriction of play)
  6. Detachment or withdrawal from relationships (socially withdrawn behaviors)
  7. Anhedonia (persistent reduction in expression of positive emotions)
E. Alterations in arousal and reactivity associated with the traumatic event
  1. Problems with anger or aggressive behavior (irritable behavior and angry outbursts [with little or no provocation], usually expressed as verbal or physical aggression toward people or objects—including extreme temper tantrums)
  2. Reckless, dangerously careless, or deliberately self-harming behavior
  3. Persistently feeling tense and on guard (hypervigilance)
  4. Easily startled (hyperarousal, exaggerated startle response)
  5. Difficulty in sustaining concentrated attention
  6. Problems falling or staying asleep (restless sleep)
F. Duration of symptoms (criteria B, C, D, and E) at least 30 days
G. The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning
H. The disturbance is not attributable to the physiological effects of a medication or illicit substance or another medical condition

[a]Adapted from the *Diagnostic and Statistical Manual*, 5th edition (*DSM-5*) of the American Psychiatric Association. These criteria apply to adults, adolescents, and children older than 6 years. Criteria for children younger than 6 years appear in parentheses next to the older age criteria.

their patients may have experienced. However, careful listening and selective probing for details of recent or distal events that may have been traumatic is an efficient way to conduct ongoing surveillance when reviewing records or getting the history or progress updates from parents/caregivers and children.[28] It is helpful to refer to carefully constructed and thorough trauma-screening instruments (see Table 2 for examples) as a guiding framework for selective inquiry rather than as formal screening interview.[29-33] It is important to consider traumatic events that happen to others as well as directly to the child, especially those affecting the child's parents or

Table 2. Trauma History Screening Instruments for Children and Adolescents.

Measure	[a]Normed, [b]Validation, [c]Field-Tested Population	Description
Childhood Trauma Questionnaire–Short Form (CTQ-SF; Bernstein et al, 2003; www.psychcorp.com)[29]	[a,b,c]12- to 17-year-old psychiatric patients and community sample	28-item self-report questionnaire, subscales (emotional, physical, sexual abuse; emotional, physical neglect and validity minimization/denial)
Dimensions of Stressor Exposure (DOSE; Fletcher, 1996; kenneth.fletcher@umassmed.edu)[31]	[c]8- to 18-year-olds from psychiatric and community samples	50-item clinician-administered scale (26 items characterize each stressful event; 24 items specific to sexual abuse)
Traumatic Experiences Screening Instrument (TESI; Daviss et al, 2000; Ford, 2008; www.ncptsd.org) [30,32]	[a,b]6- to 17-year-old psychiatric patients, emergency patients, and juvenile justice–involved youth [c]3- to 17-year-olds	15- to 24-item clinician-administered (age 3-17 years) or child self-report (age 11-17 years) measure of direct or witnessed exposure to noninterpersonal (accident, illness, disaster, loss) or interpersonal (abuse, neglect, family/community violence) traumatic victimization; probes for age(s) of onset, recency, risk factors, and Criterion A2 peritraumatic distress
UCLA Post Traumatic Stress Disorder Reaction Index (PTSD-RI; Steinberg et al, 2004; asteinberg@mednet.ucla.edu)[33]	[b,c]7- to 17-year-olds from psychiatric, school, child protection, medical, and community populations	13 self- or parent-rated items answered Yes-No (disaster, accident, medical trauma, assault, loss, abuse): "VERY SCARY, DANGEROUS, OR VIOLENT things that sometimes happen to children. These are times when someone was HURT VERY BADLY OR KILLED, or could have been."

caregivers, which the child witnessed or learned about (eg, domestic violence, severe injuries, or illnesses).

A complementary approach to pediatric surveillance of children's trauma history is careful observation and eliciting caregiver reports of children's symptoms consistent with PTSD. Children and caregivers may be unaware of or reluctant to disclose potentially traumatic events. Parents may not know what has happened to their child, but they can identify abrupt changes or persistent deterioration in their child's behavior and functioning. With both young children and with older children and adolescents, such changes or deterioration in behavior or emotion are not exclusively the result of traumatic events but have been found to be associated with traumatic exposure.[10,11] In addition, most children who experience potentially traumatic events do *not* develop lasting debilitating posttraumatic stress problems,[34] whereas other children develop PTSD despite their caregivers not being aware of any traumatic exposures.[35] Therefore, pediatric providers should be knowledgeable of brief systematic PTSD screening measures (see Table 3) in order to be able to detect symptoms or functional impairment that may be indicators of PTSD.[28,30,33,36-40] Both parent/caregiver and child self-report versions of brief PTSD screening instruments have been validated and can be administered as a part of routine screening—or used by the pediatric provider as a framework and guide for conducting surveillance during history taking and at subsequent visits or checkups.

Treatment

Psychosocial Therapies

Although childhood PTSD is highly impairing and has heterogeneous affective, anxiety, behavioral, somatic, and relational symptoms, it is a highly treatable condition. Over the past 20 years several empirically supported psychotherapies have been developed for both acute and chronic pediatric PTSD (see Table 4).[1,41-52,56]

Child traumatic stress treatment research is investigating specific therapeutic mechanisms that appear effective in trauma therapy with children and adolescents.[21,53] Common treatment elements include (1) psychoeducation about PTSD, (2) relaxation and coping skills, (3) affect monitoring and emotion regulation skills, (4) cognitive processing of reactions to trauma, (5) helping the child construct a therapeutic trauma narrative, (6) in vivo exposure to trauma reminders and practicing of coping skills, (7) conjoint parent-child sessions, and (8) monitoring and enhancing individual safety.[53]

Evidence-based psychotherapy interventions for youngsters with PTSD and/or trauma exposure psychological symptoms have been developed for individual, group, and parent-child formats and delivered in therapist's offices,

Table 3. Validated Screening Measures for Child/Adolescent PTSD Symptoms (Ford et al, 2013).[28]

Measure	[a]Normed, [b]Validation, [c]Field-Tested Population	Description
Symptoms of Traumatic Stress Child Version (SOTS-C; Ford, 2011)[38]	[b,c]5- to 17-year-olds in psychiatric or juvenile justice services	Clinician rating (7-point severity scale) of severity in past month of intrusive reexperiencing, avoidance, negative alterations in cognition and mood, hyperarousal, emotion, behavioral, and somatic dysregulation, dissociation, altered beliefs about self and the world, altered sexual functioning
UCLA Post Traumatic Stress Disorder Reaction Index (PTSD-RI; Steinberg et al, 2004); asteinberg@mednet.ucla.edu)[33]	[b,c]7- to 17-year-olds from psychiatric, school, child protection, medical, and community populations	Child self-report and parent/caregiver report of the frequency in an index month of the 17 (for *DSM-IV* version) or 20 (for *DSM-5* version) PTSD symptoms, 4 dissociative symptoms, and multidomain functional impairment
PTSD Checklist for Children/Parent Report (Daviss et al, 2000; Ford et al, 2000)[30,39]	[b,c]5- to 17-year olds from psychiatric, medical, and community populations	Child self-report and parent/caregiver report of the severity of distress and impairment in an index month caused by the 17 *DSM-IV* PTSD symptoms
PTSD Symptom Scale for Children (Foa et al, 2001)[37]	[b,c]7- to 17-year olds from psychiatric, medical, and community populations	Child self-report and parent/caregiver report of the severity of distress and impairment in an index month caused by the 17 *DSM-IV* PTSD symptoms
Trauma Symptom Checklist for Children (TSCC) and Young Children (TSCYC) (Lanktree et al, 2008)[40]	[a,b,c]3- to 17-year-olds in schools, medical, child protection, and mental health services	Parent (TSCYC) and youth (TSCC) report of factor analysis–derived subscales for child posttraumatic stress, anxiety, depression, anger, dissociation, sexual symptoms. TSCC includes 2 validity scales.
Adolescent Dissociative Experiences Scale (ADES; Armstrong et al, 1997)[36]	[b,c]11- to 16-year olds in the community and in psychiatric services	20-item self-report (0-11 scale or 6-point Likert-type scale); with factor scores for dissociative absorption, depersonalization, amnesia, passive influence

Abbreviations: *DSM, Diagnostic and Statistical Manual of Mental Disorders*; PTSD, posttraumatic stress disorder.

schools, and in the home or community.[54] When children (or their parents) are reluctant or unwilling to talk about specific trauma memories, there are evidence-based therapeutic options for either (a) preparing the child and parents to feel sufficiently safe, confident, and able to modulate distressing emotions so that the child is able to experience the trauma narrative portion of treatment successfully[55,56] or (b) to enable the child and parent to develop cognitive-behavioral[57] and self-regulation[52] skills that address PTSD by reducing everyday traumatic stress reactivity and increasing emotion regulation, self-efficacy, and social support. A randomized controlled trial also supports the use of in vivo trauma exposure—carefully orchestrated encounters with cues in the youth's natural environment that are not traumatic but that are associated with past trauma—when coping skills are first taught to teenagers exposed to sexual abuse.[42]

Early identification of children who have experienced traumatic stressors and preventive intervention addressing risk factors for the development of PTSD is recommended but not as yet widely implemented or evidence based,[58,59] with the positive exception of cognitive-behavioral interventions for traumatized children following disasters[60] or medical trauma.[61] Collaborative

care strategies are indicated for integrated pediatric mental health treatment of traumatized children.[62] When pediatric and mental health providers explicitly share the responsibility for assisting traumatized children and their families to restore safety and recover from trauma-related behavioral and emotional problems, this can ensure the necessary continuity and coordination of care—as illustrated by 2 case vignettes. Note that all case materials are disguised to protect patients' privacy.

Case Vignette 1. Alex is an 8-year-old boy who attends third grade at his neighborhood elementary school. Six months ago, he was riding his bike on the sidewalk in front of his house when he was hit by a car backing out of a nearby driveway. He suffered a broken arm, several bruised ribs, and severe lacerations. Prior to the accident, Alex was a friendly, outgoing boy who did well in school, had lots of friends, and enjoyed spending time with his younger brother and parents. Although his physical wounds have healed, Alex's parents have noticed several changes in his behavior since the accident. He climbs into their bed almost every night complaining of nightmares and he refuses to ride his bike or even play outside with the other neighborhood kids.

Table 4. Trauma-Focused Therapies.[a]

Intervention	[a]AHRQ Maltreatment, [b]AHRQ Other Trauma, [c]NREPP Evidence Base,[d]RCT N, Sample	Description
Trauma-Focused Cognitive-Behavioral Therapy (TF-CBT)	[a,b,c,d]N = 507; age 3-18 years, male and female, sexual abuse, phy-sical abuse, family violence, accidents	8- to 16-session individual/conjoint or group therapy with coping skills and (in some but not all cases) trauma narrative processing (Cohen et al, 2012; Mannarino et al, 2012)[45,56]
Parent-Child Interaction Therapy (PCIT)	[a,c,d]N = 263; age 2-12 years, male and female, physical abuse,- family violence	14- to 20-week individual/conjoint therapy with behavior management and communication skills for parents aimed at preventing recurrent maltreatment (Chaffin et al, 2011)[41]
Child-Parent Psychotherapy (CPP)	[a,b,c,d]N = 141; age 1-5 years, male and female, sexual abuse, phy-sical abuse, family or community violence	30- to 50-session (1 year) dyadic therapy focused on maternal and child attachment security, child behavior and traumatic stress symptoms (Lieberman et al, 2006)[44]
Trauma Affect Regulation: Guide for Education and Therapy (TARGET)	[b,c,d]N = 205; age 11 years to early adult, female, sexual abuse, physical abuse, family or community violence	10- to 12-session individual therapy with affect regulation, mindfulness, and trauma symptom–coping skills (Ford et al, 2011, 2012)[43,52]
Cognitive-Behavioral Intervention for Trauma in the School (CBITS)	[b,c,d]N = 121; age 10-15 years, male and female, violence	10 group sessions in school settings with coping skills and trauma memory disclosure (Stein et al, 2003)[46]
Child and Family Traumatic Stress Intervention (CFTSI)	[b,c,d]N = 61; age 3-15 years, male and female, family or community violence	4 conjoint/individual sessions for acute traumatic stress reactions and parent-child communication (Berkowitz et al, 2011)[48]
Cognitive Processing Therapy (CPT)	[b,d]N = 38; age 15-8 years old, incarcerated males, physical abuse or violence	12 individual sessions with coping and cognitive processing skills, trauma memory narrative processing (Ahrens and Rexford, 2002)[47]
Eye Movement Desensitization and Reprocessing (EMDR)	[b,d]N = 27; age 10-17 years male and female, motor vehicle accidents	4 individual sessions with coping and cognitive processing skills, trauma memory narrative processing (Kemp et al, 2010)[50]
Trauma and Grief Components Therapy for Adolescents (TGCT)	[b,d]N = 159; age 11-17 years male and female, war violence and traumatic loss	10 group sessions, 1 individual session, and 1 parent session with coping and cognitive processing skills, trauma memory narrative processing (Layne et al, 2008)[22]
Narrative Exposure Therapy (NET)	[b,c,d]N = 31; age 8-14 years male- and female, acute disaster/refugee trauma	6 individual sessions with coping and cognitive processing skills, trauma memory narrative processing (Catani et al, 2009)[49]
Prolonged Exposure Therapy (PET)	[a,d]N = 61; age 13-18 years all female, sexual abuse	14 individual sessions with coping skills and in vivo exposure to confront the trauma in real life (Foa et al, 2013)[42]

Abbreviations: AHRQ, Agency for Healthcare Research and Quality; NREPP, National Registry of Evidence-based Programs and Practices; RCT, randomized controlled trial.
[a]See Ford and Courtois[1] for more detailed descriptions.

In fact, he mostly seems to keep to himself, declining invitations to play dates and birthday parties. Recently, Alex's parents suggested that they go on a family bike ride thinking that this would "help him get back out there." Alex immediately declined. When his parents gently urged him, he began to scream and cry, and locked himself in his room. His teachers have also noticed changes in Alex. They frequently have to repeat instructions to him several times, and even then he rarely finishes his school work. They often observe him staring out the window. At recess, Alex no longer climbs on the playscape or runs around with his friends as he used to, preferring instead to play quietly in the sand box or sit on a bench and read. On several occasions, he has burst into tears over small setbacks or frustration, or yelled at other kids for accidently bumping into him.

Case Vignette 2. Danielle is a 16-year-old girl referred for treatment after her adoptive mother called emergency

mobile psychiatric services because Danielle was unable to calm down following an argument. Danielle was removed from her biological mother's care at the age of 4 because of her mother's neglect, substance use, and domestic violence between her mother and her boyfriend. She was placed in a series of foster homes, moving frequently between placements because of tantrums and accusations that she was stealing food and hiding it under her bed. At the age of 6, her biological father gained custody of her, but she was removed from his care and placed in a foster home at the age of 9 because he and her stepmother were physically and emotionally abusive toward her. She was adopted by her foster mother when she was 11 years old. Initially, Danielle got along well with her adoptive mother and did well in school, where she was a friendly and hardworking student. However, about 3 years ago, she began to exhibit a number of concerning behaviors. She started smoking cigarettes and marijuana and engaged in self-injurious cutting. She began wearing suggestive clothing and spending more time with a group of older adolescents, including a 16-year-old boy she referred to as her boyfriend. She became easily angered when she was told she could not do something, and she and her adoptive mother began to have increasingly heated arguments, often culminating in Danielle running away. Her adoptive mother reported that she did not feel able to control Danielle or keep her safe. In the past 2 years, Danielle has been involved in several individual outpatient and intensive outpatient therapy programs. She has been taken to the emergency department 3 times for evaluation because of behavioral concerns and has been hospitalized in an inpatient unit once because of an attempted overdose of pills. Her teachers report that she appears angry much of the time and seems to have difficulty paying attention in class. She is frequently defiant toward authority figures, and she has been suspended twice for fighting with other students. She often skips classes and leaves school grounds without permission, and is at risk of failing several of her classes. Danielle frequently has trouble falling asleep and in recent months she has had repeated nightmares of being murdered.

Case Discussion

These 2 cases illustrate different characteristics in the presentation of pediatric PTSD and highlight different evidence-based therapeutic approaches to address the 2 individuals' different trajectories of posttraumatic adaptation, symptom presentation, developmental stage, number and type of traumas experienced, amount of social support, and level of current impairment.

In case 1, Alex is a typically developing school-aged child, with good attachment relationships, consistent social support, and a stable and safe home environment. He experienced acute PTSD with anxious and depressed symptoms (internalizing symptoms) after a single traumatic accident. After emergency department treatment of his broken bones and lacerations, he was referred for follow-up with his outpatient pediatrician. The role of the pediatrician is to recognize symptoms of traumatic stress in Alex, provide psychoeducation to the family, and recognize the need for and refer Alex to appropriate mental health treatment. The goals of mental health treatment are to address not only Alex's symptoms of traumatic stress but also associated internalizing symptoms. Trauma-focused cognitive-behavioral therapy (TF-CBT) is an evidence-based approach to addressing posttraumatic stress symptoms and internalizing symptoms in children.[45] TF-CBT involves a series of skill-based components presented to children and parents in parallel sessions, and culminates in conjoint sessions in which the child shares his or her "trauma story" with his or her parent(s).

Using this approach, the therapist first provided psychoeducation to both Alex and his mother about trauma and PTSD to help them understand Alex's symptoms and behaviors as common responses to stressful events. Next, Alex was taught relaxation skills to help him recognize, understand, and reduce the physiological reactivity he is experiencing. His parents were taught positive parenting techniques to help them address specific concerns and behaviors. Next, affective recognition and modulation (including feelings identification, intensity ratings, and positive self-talk) was addressed and then cognitive coping skills. Once Alex was able to effectively identify and express his feelings, regulate his emotions, and use cognitive coping skills to address distressing thoughts, his therapist told him that he was ready to create his trauma narrative, which could take the form of any developmentally appropriate undertaking that engaged him in thinking about his traumatic experience, including creation of a story, comic, or song. Alex chose to create a book about his life, his family, and the accident. Through exposure and therapist-guided cognitive processing, Alex increased his ability to tolerate thinking and talking about his accident and identified and altered unhelpful and inaccurate beliefs about what happened ("it was my fault"), himself ("I'm a bad boy"), and the world ("it's not safe to go outside"). When his trauma narrative was complete, Alex shared it with his parents, who had been carefully prepared by the therapist for this meeting, including engaging in role-plays of supportive and validating responses, praise, and feedback for Alex, thus providing the family the opportunity to practice talking about the trauma together, and simultaneously enhancing the parents' role as supportive and

careful listeners for Alex. The therapist also kept track with Alex's mother of subsequent pediatric visits and provided the pediatrician with a brief summary of the therapy and Alex's progress prior to each visit. With this information, his pediatrician was able to efficiently check with Alex's mother about her perception of Alex's recovery and the therapy, and to observe how Alex was doing behaviorally in each visit.

By contrast, Danielle (case 2) is an adolescent girl who endured multiple interpersonal victimization events and traumatic losses throughout her early childhood, including emotional and physical abuse at the hands of both her mother and father, twice being removed from her biological parents' home, and multiple placements in foster homes. Although initially Danielle was relatively asymptomatic despite her significant trauma history, the onset of adolescence brought with it a delayed posttraumatic response. Danielle exhibited some of the more typical symptoms of PTSD, including intrusive reexperiencing (nightmares), avoidance of school, and hypervigilance (sleep and concentration problems), along with dysphoric, angry, and aggressive (externalizing) symptoms. Danielle had limited and inconsistent pediatric care until she was adopted, but her adoptive mother identified a pediatric practice that specialized in adolescent female health issues and scheduled regular checkup visits twice yearly to help Danielle develop better self-care and physical hygiene.

Danielle had been required to undergo emergency psychiatric treatment in several of her previous preadoptive placements. Danielle felt that none of these therapies had been helpful, because either the clinician seemed critical and "made me feel like there was something wrong with me, that I needed to be fixed" or the contact was only for a very limited time period and "as soon as I started to like [the therapists] I had to stop seeing them because I was moved to another group home or foster family." Danielle had been indifferent toward and unwilling to engage with 2 therapists who the Child Protective Services worker had required her to see, and her adoptive mother did not want to force Danielle to be in therapy. The adoptive mother talked privately about this dilemma with a nursing case manager in the pediatrics office, and the case manager then talked with both Danielle and her mother about what Danielle viewed as helpful in her positive past experiences with therapy and how they could identify therapists with a similar style and orientation whom Danielle could "audition" and then work with for as long as necessary without fear of untimely terminations. Danielle shifted from being unwilling to consider therapy to being skeptical but open to seeing if there was a therapist with whom she felt comfortable who could help—but not "fix"—her.

Danielle's therapist developed treatment goals that addressed the multiple domains of self-regulation and relatedness difficulties that were affected by the emotional and physical violence and the disruption of primary attachment bonds that occurred within the context of Danielle's developmental upbringing. In addition, addressing the strained relationship between Danielle and her adoptive mother, and helping her mother to provide consistent care, structure, and monitoring of Danielle's high-risk behaviors while also supporting Danielle's normative adolescent strivings for autonomy and privacy, were important components of her treatment. The therapist, with Danielle's knowledge and permission (and her mother's consent), updated the pediatric nurse case manager on a monthly basis about the progress, and setbacks, in Danielle's therapy. When Danielle had her next semiannual pediatric visit, the pediatrician and the nurse case manager were able to ask her and her mother what seemed helpful or not in the therapy, and how they each viewed Danielle's progress in dealing with emotional and behavioral challenges. With the preparation provided by the therapist's updates, this discussion was efficient and enabled the pediatric professionals to support Danielle's progress and her continued therapeutic involvement.

The mental health clinician used a combination of Parent Management Training and Trauma Affect Regulation: Guide for Education and Therapy (TARGET) to achieve these goals.[28] Danielle presented to therapy with the same defiant and angry presentation that her adoptive mother and teachers reported. She quickly told her therapist that she was "fine," that she would not talk about her past experiences, and that she did not need any therapy. She followed this up with the assertion that she had already been in lots of therapy and "it didn't help, anyway." Danielle's therapist reassured her that she would not have to talk about her worst memories unless she chose to do so, and that therapy would involve her and her mother learning about how coping with trauma turns on an alarm in the brain (the amygdala) that stays on even when it's not needed unless a trauma survivor knows how to reset it. Danielle liked the idea that her brain had become so proficient at protecting her when she was being abused that now it was stuck in a high alarm state, which was the source of her difficulty with anxiety and anger in relationships and school. As a result, now even small stressors were causing her brain to send out signals to prepare her body for extreme danger (the "fight-flight-freeze" response).

Danielle's therapist further explained to Danielle and her mother that therapy would help Danielle learn skills to deal with these extreme stress reactions by developing abilities that she already had—but had not known to

apply to handle stress reactions—to think clearly and focus on her core values when she recognized that her brain and body were going back into "alarm mode." In subsequent sessions, Danielle (and her mother in parallel sessions) learned TARGET's mental focusing skills to help her clear her mind and think before acting, and started to identify the triggers that activated her brain's alarm response. Together, these 2 skills were the first steps in helping Danielle learn how to prepare for and manage her alarm reactions. Next, Danielle's therapist introduced TARGET skills aimed at helping Danielle to become aware of her emotions and thoughts in order to identify and differentiate those that were "reactive" (generated by her alarm) from those that reflect her "main" values, hopes, and goals (those that occur when her alarm is reset by focused thinking). Danielle then worked with her therapist to define her "main" goals and identify the choices and behaviors that would help her achieve them. Once Danielle was able to recognize and modulate what had seemed to be uncontrollable stress reactions, she began to recognize her strengths and the many positive qualities she had to offer. As a result, she was able to become closer with her adoptive mother, enjoy her company, and earn her respect and trust, and ultimately regain a stabilizing sense of hope and self-esteem. Although she still felt troubled and saddened by memories of trauma, her PTSD symptoms subsided.

Neurobiology of Psychotherapy

Neurobiological studies in animals have shown that a sense of control over a stressful situation is key for protecting higher brain functions and allowing top-down regulation of behavior, attention, and emotion by the dorsolateral prefrontal association cortex.[63,64] When a subject feels out of control, the stress response is activated. High levels of catecholamine and cortisol release take the prefrontal cortex "off-line" while strengthening primitive brain circuits, producing unconscious, reactive behaviors and emotions, and loss of top-down executive control. In contrast, when a subject comes to feel in control of a stressful situation, the prefrontal cortex inhibits the stress response and stays "online" to thoughtfully guide behavior. Effective psychotherapy, which restores a sense of control and insight, likely acts by enhancing prefrontal cortical control over the stress response.[63,65]

Psychopharmacology

Despite advances in psychotherapy, randomized psychopharmacology clinical trials are noticeably lacking for pediatric PTSD. S*elective serotonin reuptake inhibitors*

(SSRIs) are considered to be first-line medications for adults with PTSD, and paroxetine and sertraline have a US Food and Drug Administration indication in adults. However, 2 independent controlled trials of sertraline in pediatric PTSD failed to demonstrate efficacy when compared with placebo.[66,67] Pediatric PTSD is highly comorbid with other psychiatric disorders and SSRIs are effective for the treatment of pediatric anxiety disorders[68] and depression.[69] Adrenergic medications such as guanfacine extended release and prazosin may have a role in the adjunctive treatment of dysregulated behavior associated with pediatric traumatic stress.[70,71] However, no randomized controlled trials have yet been completed to support their use for this condition.

Discussion

Recent and continuing community violence has focused attention on the symptoms and consequences of maladaptive traumatic stress and PTSD in children and adolescents. Children suffering from neglect and abuse are not uncommon in the population. Given high rates of traumatic stress exposure in children and adolescents primary care clinicians and pediatricians may increasingly be asked to identify disorders of posttraumatic stress in their treatment practices. *DSM-5* has new diagnostic PTSD criteria for children younger than 6 years. With these diagnostic changes, the prevalence of young child PTSD diagnoses may increase in the population and may increasingly present to the pediatrician for screening, evaluation, and referral.

Current standards-of-practice support TF-CBT as an evidenced-based first-line psychotherapeutic treatment for children with PTSD following abuse or community violence.[53,66] Despite its overall efficacy, many children and parents decline therapy involving intensive discussion of traumatic experiences, between one quarter to one third of children do not respond to this type of treatment, and in community samples, up to 40% drop out before treatment is complete.[72] Although there is a national network of trained TF-CBT psychotherapists (http://www.nctsn.org), most mental health clinicians have not received TF-CBT training and certification, leading to long waiting lists for PTSD treatment in many mental health practices and clinics. As illustrated by the second case example, trauma-specific emotion regulation psychotherapy (eg, the TARGET intervention) is a viable evidence-based approach for older children and adolescents who either refuse trauma-narrative therapy or whose externalizing behavior problems interfere with therapeutic engagement.[57] Psychopharmacology remains adjunctive to evidence-based psychotherapies for pediatric PTSD.

Progress in the treatment of early-onset disorders of maladaptive traumatic stress is being facilitated by emerging knowledge of phenomenology, prognosis, risk and protective factors, and the neurobiology of stress. Ongoing research in this field offers hope to children and adolescents suffering from the effects of traumatic stress exposure in the developing years. By staying informed about the rapidly developing science and the expanding evidence-based clinical options for the treatment of children's posttraumatic behavioral and emotional disorders, pediatric professionals can respond efficiently and effectively to ensure that traumatized children in their practice receive timely, well-coordinated, and ultimately beneficial treatment.

Declaration of Conflicting Interests

Funding

References

1. Ford JD, Courtois CA, eds. *Treating Complex Traumatic Stress Disorders in Children and Adolescents: Scientific Foundations and Therapeutic Models*. New York, NY: Guilford Press; 2013.
2. Banh MK, Saxe G, Mangione T, Horton NJ. Physician-reported practice of managing childhood posttraumatic stress in pediatric primary care. *Gen Hosp Psychiatry*. 2008;30:536-545.
3. Copeland-Linder N. Posttraumatic stress disorder. *Pediatr Rev*. 2008;29:103-104.
4. McLaughlin KA, Koenen KC, Hill ED, et al. Trauma exposure and posttraumatic stress disorder in a national sample of adolescents. *J Am Acad Child Adolesc Psychiatry*. 2013;52:815.e14-830.e14.
5. Seedat S, Nyamai C, Njenga F, Vythilingum B, Stein DJ. Trauma exposure and post-traumatic stress symptoms in urban African schools: survey in CapeTown and Nairobi. *Br J Psychiatry*. 2004;184:169-175.
6. Centers for Disease Control and Prevention. Assault all injury causes nonfatal injuries and rates per 100,000, all races, both sexes, ages 0 to 24. 2010 (Web-based Injury Statistics Query and Reporting System (WISQARS) (2008). http://www.cdc.gov/injury/wisqars. Accessed December 7, 2011.
7. Shonkoff JP, Garner AS. The lifelong effects of early childhood adversity and toxic stress. *Pediatrics*. 2012;129: e232-e246.
8. Grasso DJ, Saunders BE, Williams LM, Hanson R, Smith DW, Fitzgerald MM. Patterns of multiple victimization among maltreated children in Navy families. *J Trauma Stress*. 2013;26:597-604.

9. Felitti VJ, Anda RF, Nordenberg D, et al. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. The Adverse Childhood Experiences (ACE) Study. *Am J Prev Med*. 1998;14:245-258.
10. Briggs-Gowan MJ, Carter AS, Clark R, Augustyn M, McCarthy KJ, Ford JD. Exposure to potentially traumatic events in early childhood: differential links to emergent psychopathology. *J Child Psychol Psychiatry*. 2010;51:1132-1140.
11. Briggs-Gowan MJ, Ford JD, Fraleigh L, McCarthy K, Carter AS. Prevalence of exposure to potentially traumatic events in a healthy birth cohort of very young children in the northeastern United States. *J Trauma Stress*. 2011;23:725-733.
12. Sugar J, Ford JD. Peritraumatic reactions and posttraumatic stress disorder in psychiatrically impaired youth. *J Trauma Stress*. 2012;26:41-49.
13. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. 5th ed. Washington, DC: American Psychiatric Association; 2013.
14. Ford JD, Fraleigh LA, Connor DF. Child abuse and aggression among seriously emotionally disturbed children. *J Clin Child Adolesc Psychol*. 2010;39:25-34.
15. Strawn JR, Adler CM, Fleck DE, et al. Post-traumatic stress symptoms and trauma exposure in youth with first episode bipolar disorder. *Early Interv Psychiatry*. 2010;4:169-173.
16. Breslau N, Davis GC, Andreski P, Peterson E. Traumatic events and posttraumatic stress disorder in an urban population of young adults. *Arch Gen Psychiatry*. 1991;48: 216-222.
17. Copeland WE, Keeler G, Angold A, Costello EJ. Posttraumatic stress without trauma in children. *Am J Psychiatry*. 2010;167:1059-1065.
18. Kilpatrick DG, Ruggiero KJ, Acierno R, Saunders BE, Resnick HS, Best CL. Violence and risk of PTSD, major depression, substance abuse/dependence, and comorbidity: results from the National Survey of Adolescents. *J Consult Clin Psychol*. 2003;71:692-700.
19. Alisic E, Zalta AK, van Wesel F, et al. Rates of posttraumatic stress disorder in trauma-exposed children and adolescents: meta-analysis. *Br J Psychiatry*. 2014;204:335-340.
20. D'Andrea W, Ford JD, Stolbach B, Spinazzola J, Van der Kolk BA. Understanding interpersonal trauma in children: why we need a developmentally appropriate trauma diagnosis. *Am J Orthopsychiatry*. 2012;82:187-200.
21. Schneider SJ, Grilli SF, Schneider JR. Evidence-based treatments for traumatized children and adolescents. *Curr Psychiatry Rep*. 2013;15:332.
22. Layne C, Beck C, Rimmasch H, Southwick J, Moreno M, Hobfoll S. Promoting "resilient" posttraumatic adjustment in childhood and beyond. In: Brom D, Pat-Horenczyk R, Ford JD, eds. *Treating Traumatized Children: Risk, Resilience, and Recovery*. London, England: Routledge; 2008:13-47.

23. Smid GE, Mooren TT, van der Mast RC, Gersons BP, Kleber RJ. Delayed posttraumatic stress disorder: systematic review, meta-analysis, and meta-regression analysis of prospective studies. *J Clin Psychiatry*. 2009;70: 1572-1582.

24. Briggs-Gowan MJ, Carter AS, Ford JD. Parsing the effects violence exposure in early childhood: modeling developmental pathways. *J Pediatr Psychol*. 2012;37: 11-22.

25. Kelly P. Posttraumatic stress disorder. *Pediatr Rev*. 2012;33:382-383.

26. Betancourt TS, Newnham EA, McBain R, Brennan RT. Post-traumatic stress symptoms among former child soldiers in Sierra Leone: follow-up study. *Br J Psychiatry*. 2013;203:196-202.

27. Masten AS, Narayan AJ. Child development in the context of disaster, war, and terrorism: pathways of risk and resilience. *Annu Rev Psychol*. 2012;63:227-257.

28. Ford JD, Nader K, Fletcher KE. Clinical assessment and diagnosis. In: Ford JD, Courtois CA, eds. *Treating Complex Traumatic Stress Disorders in Children and Adolescents: Scientific Foundations and Therapeutic Models*. New York, NY: Guilford Press; 2013:116-142.

29. Bernstein DP, Stein JA, Newcomb MD, et al. Development and validation of a brief screening version of the Childhood Trauma Questionnaire. *Child Abuse Negl*. 2003;27:169-190.

30. Daviss WB, Mooney D, Racusin R, Ford JD, Fleischer A, McHugo G. Predicting post-traumatic stress after hospitalization for pediatric injury. *J Am Acad Child Adolesc Psychiatry*. 2000;39:576-583.

31. Fletcher K. Psychometric review of Dimensions of Stressful Events (DOSE) Ratings Scale. In: Stamm BH, ed. *Measurement of Stress, Trauma, and Adaptation*. Lutherville, MD: Sidran Press; 1996:144-151.

32. Ford JD. Diagnosis of traumatic stress disorders (DSM and ICD). In: Reyes G, Elhai JD, Ford JD, eds. *Encyclopedia of Psychological Trauma*. Hoboken, NJ: Wiley; 2008:200-208.

33. Steinberg AM, Brymer MJ, Decker K, Pynoos RS. The University of California at Los Angeles Post-Traumatic Stress Disorder Reaction Index. *Curr Psychiatry Rep*. 2004;6:96-100.

34. Copeland WE, Keeler G, Angold A, Costello EJ. Traumatic events and posttraumatic stress in childhood. *Arch Gen Psychiatry*. 2007;64:577-584.

35. Kenardy JA, Spence SH, Macleod AC. Screening for posttraumatic stress disorder in children after accidental injury. *Pediatrics*. 2006;118:1002-1009.

36. Armstrong JG, Putnam FW, Carlson EB, Libero DZ, Smith SR. Development and validation of a measure of adolescent dissociation: the Adolescent Dissociative Experiences Scale. *J Nerv Ment Dis*. 1997;185:491-497.

37. Foa EB, Johnson K, Feeny NC, Treadwell KR. The Child PTSD Symptom Scale: a preliminary examination of its psychometric properties. *J Clin Child Psychol*. 2001;30:376-384.

38. Ford JD. Assessing child and adolescent complex traumatic stress reactions. *J Child Adolesc Trauma*. 2011;4:217-232.

39. Ford JD, Racusin R, Ellis CF, et al. Child maltreatment, other trauma exposure, and posttraumatic symptomatology among children with oppositional defiant and attention deficit hyperactivity disorders. *Child Maltreat*. 2000;5:205-217.

40. Lanktree CB, Gilbert AM, Briere J, et al. Multi-informant assessment of maltreated children: convergent and discriminant validity of the TSCC and TSCYC. *Child Abuse Negl*. 2008;32:621-625.

41. Chaffin M, Funderburk B, Bard D, Valle LA, Gurwitch R. A combined motivation and parent-child interaction therapy package reduces child welfare recidivism in a randomized dismantling field trial. *J Consult Clin Psychol*. 2011;79:84-95.

42. Foa EB, McLean CP, Capaldi S, Rosenfield D. Prolonged exposure vs supportive counseling for sexual abuse-related PTSD in adolescent girls: a randomized clinical trial. *JAMA*. 2013;310:2650-2657.

43. Ford JD, Steinberg KL, Zhang W. A randomized clinical trial comparing affect regulation and social problem-solving psychotherapies for mothers with victimization-related PTSD. *Behav Ther*. 2011;42:560-578.

44. Lieberman AF, Ghosh Ippen C, Van Horn P. Child-parent psychotherapy: 6-month follow-up of a randomized controlled trial. *J Am Acad Child Adolesc Psychiatry*. 2006;45:913-918.

45. Mannarino AP, Cohen JA, Deblinger E, Runyon MK, Steer RA. Trauma-focused cognitive-behavioral therapy for children: sustained impact of treatment 6 and 12 months later. *Child Maltreat*. 2012;17:231-241.

46. Stein BD, Jaycox LH, Kataoka S, et al. A mental health intervention for schoolchildren exposed to violence: a randomized controlled trial. *JAMA*. 2003;290:603-611.

47. Ahrens J, Rexford L. Cognitive processing therapy for incarcerated adolescents with PTSD. *J Aggress Maltreat Trauma*. 2002;6:201-216.

48. Berkowitz SJ, Stover CS, Marans SR. The Child and Family Traumatic Stress Intervention: secondary prevention for youth at risk of developing PTSD. *J Child Psychol Psychiatry*. 2011;52:676-685.

49. Catani C, Kohiladevy M, Ruf M, Schauer E, Elbert T, Neuner F. Treating children traumatized by war and Tsunami: a comparison between exposure therapy and meditation-relaxation in North-East Sri Lanka. *BMC Psychiatry*. 2009;9:22.

50. Kemp M, Drummond P, McDermott BM. A wait-list controlled pilot study of eye movement desensitization and reprocessing (EMDR) for children with post-traumatic stress disorder (PTSD) symptoms from motor vehicle accidents. *Clin Child Psychol Psychiatry*. 2010;15:5-25.

51. Layne CM, Saltzman WR, Poppleton L, et al. Effectiveness of a school-based group psychotherapy program for war-exposed adolescents: a randomized controlled trial. *J Am Acad Child Adolesc Psychiatry*. 2008;47:1048-1062.

52. Ford JD, Steinberg KL, Hawke J, Levine J, Zhang W. Randomized trial comparison of emotion regulation and relational psychotherapies for PTSD with girls involved in delinquency. *J Clin Child Adolesc Psychol*. 2012;41: 27-37.

53. Carrion VG, Kletter H. Posttraumatic stress disorder: shifting toward a developmental framework. *Child Adolesc Psychiatr Clin N Am*. 2012;21:573-591.

54. American Academy of Child and Adolescent Psychiatry. Practice parameter for the assessment and treatment of children and adolescents with posttraumatic stress disorder. *J Am Acad Child Adolesc Psychiatry*. 2010;49: 414-430.

55. Matulis S, Resick PA, Rosner R, Steil R. Developmentally adapted cognitive processing therapy for adolescents suffering from posttraumatic stress disorder after childhood sexual or physical abuse: a pilot study. *Clin Child Fam Psychol Rev*. 2014;17:173-190.

56. Cohen JA, Mannarino AP, Kliethermes M, Murray LA. Trauma-focused CBT for youth with complex trauma. *Child Abuse Negl*. 2012;36:528-541.

57. Deblinger E, Mannarino AP, Cohen JA, Runyon MK, Steer RA. Trauma-focused cognitive behavioral therapy for children: impact of the trauma narrative and treatment length. *Depress Anxiety*. 2011;28:67-75.

58. Kliem S, Kroger C. Prevention of chronic PTSD with early cognitive behavioral therapy. A meta-analysis using mixed-effects modeling. *Behav Res Ther*. 2013;51: 753-761.

59. Skeffington PM, Rees CS, Kane R. The primary prevention of PTSD: a systematic review. *J Trauma Dissociation*. 2013;14:404-422.

60. Berger R, Gelkopf M. School-based intervention for the treatment of tsunami-related distress in children: a quasi-randomized controlled trial. *Psychother Psychosom*. 2009;78:364-371.

61. Kassam-Adams N, Garcia-Espana JF, Marsac ML, et al. A pilot randomized controlled trial assessing secondary prevention of traumatic stress integrated into pediatric trauma care. *J Trauma Stress*. 2011;24:252-259.

62. Rousseau C, Measham T, Nadeau L. Addressing trauma in collaborative mental health care for refugee children. *Clin Child Psychol Psychiatry*. 2013;18:121-136.

63. Arnsten AFT. Stress signaling pathways that impair prefrontal cortex structure and function. *Nat Rev Neurosci*. 2009;32:267-287.

64. Arnsten A, Mazure CM, Sinha R. This is your brain in meltdown. *Sci Am*. 2012;306:48-53.

65. Arnsten AF, Jin LE. Molecular influences on working memory circuits in dorsolateral prefrontal cortex. *Prog Mol Biol Transl Sci*. 2014;122:211-231.

66. Cohen JA, Mannarino AP, Perel JM, Staron V. A pilot randomized controlled trial of combined trauma-focused CBT and sertraline for childhood PTSD symptoms. *J Am Acad Child Adolesc Psychiatry*. 2007;46:811-819.

67. Robb AS, Cueva JE, Sporn J, Yang R, Vanderburg DG. Sertraline treatment of children and adolescents with posttraumatic stress disorder: a double-blind, placebo-controlled trial. *J Child Adolesc Psychopharmacol*. 2010;20:463-471.

68. Rynn M, Puliafico A, Heleniak C, Rikhi P, Ghalib K, Vidair H. Advances in pharmacotherapy for pediatric anxiety disorders. *Depress Anxiety*. 2011;28:76-87.

69. March J, Silva S, Petrycki S, et al. Fluoxetine, cognitive-behavioral therapy, and their combination for adolescents with depression: Treatment for Adolescents With Depression Study (TADS) randomized controlled trial. *JAMA*. 2004;292:807-820.

70. Connor DF, Grasso DJ, Slivinsky MD, Pearson GS, Banga A. An open-label study of guanfacine extended release for traumatic stress related symptoms in children and adolescents. *J Child Adolesc Psychopharmacol*. 2013;23:244-251.

71. Fraleigh LA, Hendratta VD, Ford JD, Connor DF. Prazosin for the treatment of posttraumatic stress disorder-related nightmares in an adolescent male. *J Child Adolesc Psychopharmacol*. 2009;19:475-476.

72. Cohen JA, Mannarino AP, Iyengar S. Community treatment of posttraumatic stress disorder for children exposed to intimate partner violence: a randomized controlled trial. *Arch Pediatr Adolesc Med*. 2011;165:16-21.