The Sequelae of Adverse Childhood Experiences:

Screening and Management

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Lessons Learned at the Interface of Medicine and Psychiatry

The Psychiatric Consultation Service at Massachusetts General Hospital sees medical and surgical inpatients with comorbid psychiatric symptoms and conditions. During their twice-weekly rounds, Dr Stern and other members of the Consultation Service discuss the diagnosis and management of hospitalized patients with complex medical or surgical problems who also demonstrate psychiatric symptoms or conditions. These discussions have given rise to rounds reports that will prove useful for clinicians practicing at the interface of medicine and psychiatry.

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Have you ever been horrified to learn about the abuse suffered by your patients earlier in life? Have you considered what factors might have predisposed them to psychiatric sequelae? Have you wondered what the downstream effects of childhood trauma entail and how they can be identified and managed? If you have, the following case vignette and discussion should prove useful.

CASE VIGNETTE

Mr C, a 36-year-old married US Marine Corps Veteran (with 1 combat deployment to Afghanistan, where he had been exposed to repetitive artillery and blast exposure), developed posttraumatic stress disorder (PTSD) and an alcohol use disorder (AUD). He had participated in an intensive clinical program 6 years earlier and an AUD detox program 4 years ago and was receiving fluoxetine (10 mg/day) and aripiprazole (5 mg/day). He suffered from increasing family stressors (including spousal frustrations and parenting difficulties) and became irritable and angry over small things. He was increasingly concerned about his having developed a traumatic brain injury (TBI) secondary to his repeated exposure to artillery and small arms fire during training and while deployed, even though he had never experienced loss of consciousness. He endorsed problems with brain fog (eg, impairments of attention, concentration, and memory), chronic tension-type headaches, and musculoskeletal pain and was easily distressed and anxious. His wife was concerned about whether he had developed attention-deficit/hyperactivity disorder (ADHD) given his problems with attention and memory.

Mr C's social history revealed a significant exposure to childhood trauma, including parental neglect, where he and his brothers were frequently left unsupervised, as well as ongoing sexual abuse by his oldest brother during these times. He also experienced exposure to domestic violence, with frequent conflicts and violent altercations between his parents. In addition, he exhibited subthreshold symptoms of ADHD during his youth (eg, hyperactivity, difficulty focusing, and disruptive behavior in classroom settings, manifest by speaking out of turn, blurting answers, and restlessness). While ADHD diagnosis does not require formal neuropsychological testing, the lack of such testing may reflect aspects of parental neglect, as Mr C did not have access to the support or resources necessary for a formal evaluation. To cope with the overwhelming stress at home, Mr C had often acted out as the class clown, using humor and disruptive behavior as a way to conceal the emotional toll of his home life. In addition, he noted problematic alcohol use, which had begun to interfere with his relationships with his wife and children.

Laboratory testing revealed a normal complete metabolic profile, with normal liver enzymes. A complete blood count was within normal limits. Urine toxicology was negative for all substances.

In the interview, Mr C reported that he continued to drink several times a week to cope with his PTSD

Clinical Points

- Long-term complications of adverse childhood experiences (ACEs) involve psychiatric and medical conditions, such as mood and substance use disorders, chronic diseases of the heart and lungs, obesity, diabetes, cancer, and posttraumatic stress disorder (PTSD), with the highest rates of PTSD being linked to childhood maltreatment.
- Diagnosis and treatment may be delayed, as several childhood-onset conditions (eg, generalized anxiety disorder, panic disorder, and attention-deficit/hyperactivity disorder) have overlapping features with those associated with ACEs.
- Screening for ACEs involves the use of a structured or semistructured trauma-informed interview along with tools like the ACE Questionnaire.
- A variety of triggers, such as sensory stimuli like sights, sounds, and smells, can reactivate memories of ACEs.

symptoms. He described his symptoms as "pressure building on a dam," with alcohol serving to "open the floodgates." Since resuming fluoxetine and aripiprazole, Mr C felt that he had been managing his symptoms better, and he had been engaging in cognitive processing therapy (CPT) for his trauma-related stress symptoms.

DISCUSSION

What Are Adverse Childhood Experiences?

Adverse childhood experiences (ACEs) are potentially traumatic events that occur during a time of rapid development that contribute to a lasting negative impact on health and well-being. First conceptualized in the United States in the late 1990s, ACEs are categorized as abuse (eg, physical, emotional, and sexual harm), neglect (eg, physical and emotional), and household dysfunction (characterized by stressors, eg, mental illness, mothers treated violently, divorce, having an incarcerated relative, or substance abuse).[1]

Individuals having a greater number of ACEs have an increased risk of diseases and behaviors, eg, those with 4 or more ACEs have a 4–12-fold higher risk for drug abuse, alcoholism, depression, and suicide attempts, compared to those who lack ACEs. Four or more ACEs are also associated with a 2–4-fold increase in cigarette smoking, poor self-rated health, involvement with more than 50 sexual partners, and sexually transmitted diseases, as well as a 1.4–1.6-fold increase in obesity and inactivity. Furthermore, a greater number of ACEs are correlated with more severe ischemic heart disease, chronic lung disease, cancer, skeletal fractures, and liver disease.[2] The impact of childhood stressors is cumulative, with the toll of trauma intensifying as the number of ACEs increases.

More recent research has expanded the range of important traumas and stressors to include those more prevalent in lower-income and urban environments, providing a broader type of childhood adversity that can contribute to long-term health outcomes. In addition, there are now other screening tools for trauma, including the Trauma History Screen, and substance use problems that may be more applicable to diverse populations.[3,4]

Who Is at Greatest Risk for ACEs?

Although ACEs are not determined by an individual's gender, race, or class, those who experience poverty report a greater number of ACEs.[5] Individuals with 4 or more ACEs are more likely to experience poverty and have reduced access to food, fewer socioeconomic resources, a higher rate of substance-related overdose deaths, a higher crime rate, and worse perceived physical and mental health.[6] Individual factors (eg, older age, family structure, and type of health insurance) are also linked with having more ACEs. Moreover, those with public insurance and who are uninsured have more ACEs. Adolescents are more likely than young children to be exposed to divorce, disrupted households, and violence. Children who live in a family with other than 2 married parents have a higher risk of exposure to violence, disrupted households, or economic hardships.[7]

What Is the Effect of ACEs on Physiologic Functions?

ACEs affect psychological and physiologic functions (eg, altering inflammatory, immune, and genetic biomarkers) that have health implications later in life. ACEs elevate inflammatory markers in adulthood and are associated with elevated baseline peripheral levels of tumor necrosis factor-α, interleukin-6, and C-reactive protein in those who have experienced ACEs.[8] There is also an increase in immune biomarkers (eg, T-cell–associated cytokines, chemokines, and growth factors) in those with ACEs.[9] In addition, the hypothalamic-pituitary-adrenal (HPA) axis is modulated by the immune system and by inflammatory signals, and it is impacted by environmental stressors such as ACEs.[8] Evidence on the impact of these experiences on cortisol is mixed, with studies showing elevated, suppressed, or unchanged cortisol levels.[10]

Childhood adversity also alters telomere length. Telomeres shorten with each cellular division during biological aging; however, stress and inflammation can accelerate this shortening process.[11] The link between stress and telomere length may be related to mitochondrial dysfunction and prolonged stress-induced telomerase inactivation, as those with ACEs have shorter telomere lengths.[8,11] This premature shortening of telomeres may play a role in the development of stress-related diseases, illuminating the connection between ACEs and adverse health effects.

An additional important aspect is that the impact of childhood stressors is heavily influenced by the developmental state in which they occur. For example, early childhood stressors can lead to epigenetic changes that affect long-term health outcomes, while stress experienced in older children may contribute to behavioral problems. Furthermore, the nature of the trauma itself—whether a one-time event (eg, major accident or death), ongoing (eg, chronic abuse), or episodic (eg, an abusive parent who is intermittently in and out of jail)—can significantly shape how the stressor impacts neurobiological development. This dynamic was explored in Agorastos and colleagues' narrative review,[12] which discusses the developmental trajectories associated with early life stress and trauma.

How Do ACEs Adversely Impact Psychological Experience and Function?

ACEs that occur during critical developmental stages contribute to untoward long-term health outcomes.[13] According to the Centers for Disease Control and Prevention, ACEs are associated with an increased risk for physical and mental health problems across the lifespan. Psychological stressors (inside and outside the home) can contribute to developmental delays and adversely affect a child's psychosocial functioning and classroom adaptation.[14] A child can be impacted negatively by hypervigilance to threatening stimuli, which can interfere with developing healthy attachments, which leaves them feeling isolated and lonely and at increased risk for suicidal behavior.[12,13,15,16]

Moreover, there is a "dose-response" relationship between the severity of ACEs and the odds of an adverse mental health outcome in adulthood (eg, PTSD, depression, anxiety, personality disorders, and comorbid substance abuse).[17] A meta-analysis by Porter and colleagues[18] aimed to better understand the impact of childhood adversity and borderline personality disorder (BPD). Individuals with BPD were more than 3 times as likely to report childhood adversity compared to other psychiatric groups, with emotional abuse and neglect demonstrating the largest effects.[18] Additional reviews highlight maltreatment as a risk factor for borderline features in childhood.[19] Geselowitz and colleagues[20] found that preschool ACEs may be early predictors of BPD symptoms, particularly in those with internalizing and externalizing psychopathology, high ACEs, and early suicidality. BPD, as a sequela of childhood traumas, often coexists with multiple comorbidities (eg, mood, anxiety, eating, addictive, and somatoform disorders and PTSD), so its management can be informed by patient, family, and clinical staff recognition of the influence of early life trauma.[21] In addition, those with greater exposure to ACEs have difficulty with emotional regulation and aggression.[22]

Each of these factors contributes to diminished connections and maladaptive coping strategies (eg, smoking cigarettes, eating a poor diet, and engaging in risky sexual behaviors) that undermine their health.[23] ACEs also predispose to somatic sequelae (eg, obesity, diabetes, ulcerative colitis, Crohn's disease, cardiovascular disease, and cancer).[17,18,24,25] Since roughly 60% of adults have had at least 1 ACE and 5 of the top 10 causes of death are associated with ACEs, health care providers should screen for ACEs and intervene in a timely and effective manner.[26]

What Are the Signs and Symptoms of Childhood Trauma?

Traumatic events profoundly impact developing children and lead to myriad symptoms. These events activate the HPA axis, which results in heightened arousal and reactivity to stress and leads to changes in stress-related brain regions (eg, the volume and connectivity of the amygdala, hippocampus, and prefrontal cortex).[27,28] The consequences of childhood trauma vary among different age groups, with difficulties with emotional regulation manifest across all age groups. Among preschool-aged children, increased arousal (as evidenced by crying, separation anxiety or aggression, nightmares, and changes in appetite) is often seen. In older children, academic performance frequently suffers due to impairment of concentration ability and social withdrawal.[22,23,29,30] Somatic symptoms secondary to trauma include aches and pains, gastrointestinal symptoms (including diarrhea and constipation), fatigue, chest pain, and dizziness.[31]

Long-term complications of ACEs involve a multitude of psychiatric and medical conditions, including mood and substance use disorders (SUDs), chronic diseases of the heart and lungs, obesity, diabetes, and cancer.[32] In addition, childhood trauma predisposes to PTSD later in life, with the highest rates of PTSD being linked to childhood maltreatment (especially among black and Hispanic populations).[33] Therefore, it is essential to monitor individuals closely for the signs and symptoms of trauma, so that timely and effective interventions can be initiated.

Which Childhood-Onset Conditions Have Symptom Overlap With Childhood Trauma?

Several childhood-onset conditions have overlapping features with those associated with ACEs; this can complicate both diagnosis and treatment. Generalized anxiety disorder (GAD), panic disorder, and ADHD are among the most common childhood and adolescent disorders.[34,35] In addition, anxiety disorders and ADHD frequently co-occur and may also present with comorbid depression, conduct disorder (CD), and difficulties with behavioral control.[34,35] Anxiety disorders and ADHD share common features (eg, restlessness and

hyperarousal), which are also hallmark symptoms of exposure to trauma. Children with a history of trauma often present with heightened vigilance or fearfulness that mimics the avoidance or panic responses seen in anxiety disorders. In addition, social anxiety and agoraphobia, which are often associated with a fear of being judged or exposed to dangerous situations, can develop in children who have experienced trauma, as these individuals may perceive social interactions as threatening or feel unsafe in public spaces.

ADHD shares substantial symptom overlap with childhood trauma, particularly related to attention, hyperactivity, and impulsivity. Children who have experienced trauma often exhibit difficulties with concentration, distractibility, and impulsive behaviors that mirror the manifestations of ADHD. However, trauma-related symptoms are often triggered by external reminders of past events, unlike the pervasive nature of ADHD. Furthermore, emotional dysregulation and challenges in academic or social settings that are common to both ADHD and PTSD can further blur the boundaries between these diagnoses. When the association between predeployment ADHD and postdeployment PTSD in US Army soldiers was studied, predeployment ADHD was significantly associated with an increased risk of PTSD, major depressive disorder (MDD), and GAD.[36] These results raise concerns about the overlap of ADHD symptoms with those of PTSD, MDD, and GAD, as well as the potential impact of childhood trauma on these associations. Recognizing these overlaps is crucial for improving diagnostic precision and framing treatment, as well as for exploring whether treatment of ADHD can protect against PTSD and these other disorders in trauma-exposed individuals.

Obsessive-compulsive symptoms can also emerge in children exposed to trauma, manifesting as a need for control or using repetitive behaviors as coping mechanisms. These behaviors may resemble those seen in obsessive-compulsive disorder, but they are more likely to be tied to the child's need to regain a sense of safety following trauma. The link between childhood trauma, PTSD, and the development of cognitive or learning difficulties also adds another layer of diagnostic complexity. Primary care physicians (PCPs) should assess the context of these symptoms and consider the potential of an underlying trauma to provide an accurate diagnosis and guide interventions.

ADHD often co-occurs with other disorders (eg, oppositional defiant disorder [ODD]), which affect about 60% of children and adolescents with ADHD.[37] ODD is characterized by a persistent pattern of deviant and disobedient behavior toward authority figures (eg, parents and teachers). ODD and CD share significant symptom overlap with childhood trauma, often complicating the diagnostic process. Children who have experienced trauma, such as physical or emotional abuse or neglect, may exhibit behaviors typically associated with CD, such as aggression, defiance, or rule breaking. These behaviors can be a response to early life adversity, with the child attempting to assert control in chaotic or unsafe environments. Trauma-exposed children may also display a lack of empathy or remorse, which are hallmark features of CD, but in these cases, such emotional detachment can be a defense mechanism against stress or fear.

In addition to aggression and defiance, children with trauma histories may show impulsivity and poor decision-making, which overlaps with symptoms of ADHD and CD. This impulsivity may lead to disruptive or antisocial behaviors (eg, fighting, theft, or destruction of property). However, unlike CD, which often reflects a pattern of behavior extending beyond specific stressors, trauma-related conduct issues may fluctuate based on the child's emotional state and environmental stressors, such as family conflict or exposure to ongoing violence. These behaviors may be part of a broader struggle with emotional regulation, which trauma often exacerbates.

Furthermore, the interpersonal difficulties seen in CD—such as conflicts with peers, authority figures, and family members—may also be rooted in unresolved trauma. Trauma-affected children may struggle to form healthy relationships, and their aggression or hostility toward others can be a defense against perceived threats. As a result, it is crucial for PCPs to evaluate the context of these behaviors. CD and trauma can present similarly, but treatment strategies often differ significantly, particularly if trauma is the underlying cause of the child's behavior. Early intervention that focuses on trauma-informed care can be critical in helping these children develop healthier coping mechanisms and interpersonal skills.

Neurodevelopmental conditions (eg, autism spectrum disorder, ADHD, learning disorders, and intellectual disabilities) typically manifest early in life and share common neurodevelopmental characteristics. Although these conditions are categorized in the *Diagnostic and Statistical Manual of Mental Disorders*, Fifth Edition, Text Revision, their diagnoses present challenges due to their frequent co-occurrence and significant variability.[38] Evidence suggests that these conditions form a "neurodevelopmental spectrum," characterized by overlapping genetic, cognitive, and neurological profiles.[39] This spectrum provides valuable insights for research and clinical practices, offering a more comprehensive understanding of individual needs and strengths compared to traditional diagnostic categories. Incorporating this neurodevelopmental spectrum into transdiagnostic frameworks could significantly enhance our approach to understanding and treating neurodevelopmental and psychiatric conditions. Learning disorders often primarily impact specific academic skills (eg, reading, writing, or mathematics) and are not necessarily associated with overall cognitive

ability. In contrast, intellectual disabilities involve below-average general intellectual functioning and adaptive behavior, while ADHD is characterized by symptoms of inattention, hyperactivity, and impulsivity.

Childhood-onset conditions such as alcohol and SUDs, often overlap with childhood trauma, making it challenging to differentiate between the two. Both conditions can manifest with emotional dysregulation, impulsivity, and difficulty with interpersonal relationships. Children who have experienced trauma may use substances to self-medicate or cope with overwhelming emotions (eg, anxiety, depression, dissociation, irritability, and sleep disturbances). Approximately 2% of boys and 4% of girls aged 12–17 years in the United States meet the criteria for AUD, which should be considered in the context of trauma exposure.[40] Recognizing the overlap in symptoms, along with early identification and intervention, is critical, as adolescent alcohol and substance use can be both a response to trauma and a risk for long-term health issues. Therefore, it is essential for PCPs to screen for substance use in this age group.

Which Conditions Are Commonly Seen in Adults With a History of ACEs?

The impact of ACEs on physical health is profound, with significant rates of chronic diseases, cancer, substance use, and chronic pain among those who have experienced childhood adversity. There is a strong correlation between childhood adversity and poor health outcomes, including increased risk of ischemic heart disease, respiratory illness, cancer, skeletal fractures, and liver disease.[2] The risk of cardiovascular disease, respiratory disease, or cancer is 3 times higher in those with 4 or more ACEs, which illustrates the dose-response relationship between ACEs and health consequences.[41] Furthermore, ACEs are associated with a higher risk of premature death, as people who experience 6 or more ACEs have an average lifespan of 20 years less than those without ACEs.[42]

Individuals who have experienced childhood adversity also have higher rates of substance use, including smoking, alcohol use, illicit drug use, and cannabis use.[43] A systematic review and meta-analysis found that the association between 4 or more ACEs and smoking and heavy alcohol use was moderate with an odds ratio of 2–3, while strongest for problematic drug use with an odds ratio of more than 7.[41]

In addition, exposure to ACEs increases the likelihood of chronic pain or pain-related disability in adulthood.[44] A dose-response relationship was also observed with chronic pain, with cumulative ACEs correlating with higher reports of pain-related distress.[44] Therefore, it is essential that PCPs recognize the higher prevalence of poor health outcomes in patients who have had ACEs to facilitate early detection and intervention.

How Can the Psychological Sequelae of ACEs Be Screened For and Identified?

Screening for ACEs involves using a structured or semistructured trauma-informed interview along with tools like the ACE Questionnaire.[45] Higher ACE scores predict behavioral health problems in both childhood and adulthood. They are also associated with worsening mental health, adverse health-related behaviors, an increased burden of chronic diseases, and premature mortality.[46]

When screening children for ACEs, information should be obtained from parents and teachers to provide additional perspectives on the child's behavior and emotional state.[47] Other childhood screening tools include the Pediatric Symptom Checklist[48,49] to help identify and assess changes in emotional and behavioral problems, the Strengths and Difficulties Questionnaire[50,51] to measure psychosocial functioning, the Behavior Problems Index[52] to assess the incidence and severity of behavioral problems, or the Positive Behavior Scale[53,54] to measure positive behaviors such as self-control, self-esteem, and social competence. These screening tools can be supplemented with standardized tests, such as the Child Behavior Checklist,[55] and trauma-specific assessments (eg, the Trauma Symptom Checklist for Children[56]). Using standardized assessments helps clinicians evaluate emotional and behavioral functioning, while trauma-specific inventories identify symptoms related to specific types of traumas.

What Can Rekindle Memories of ACEs?

A variety of triggers (eg, sensory stimuli such as sights, sounds, and smells) can reactivate memories of ACEs. The olfactory system, which signals the amygdala and hippocampus, bypassing the thalamus, has long been linked with the reactivation of traumatic memories.[57] Environmental triggers (including the location of the traumatic event or situations resembling the traumatic event) and life stressors (eg, role transitions such as graduating from college, becoming a parent, getting divorced, or losing a loved one) can also reactivate memories of childhood trauma. Emotional triggers (involving conflicts and interpersonal struggles with partners) can rekindle memories of rejection, neglect, or abuse. Anniversaries of traumatic events (that may involve media coverage) can trigger memories of ACEs, as can the time of the year when traumatic events occurred. In addition, pain and medical conditions that are associated with functional limitations may generate vulnerability and helplessness that are like the feelings experienced during childhood, and they often reactivate traumatic

memories.[30,58] Understanding these triggers facilitates the delivery of trauma-informed care.

How Can an Understanding of the Social Determinants of Health and Mental Health Inform Our Treatment Paradigms?

The social determinants of health (SDoH) and social determinants of mental health (SDoMH) are environmental factors (ie, where people live, work, recreate, learn, and worship) that influence functioning, quality of life, and health.[59] ACEs are a category of negative SDoH with a dose-dependent increase in associated health risks. SDoMH include intergenerational trauma, race, ethnicity, environmental factors (eg, climate disasters, political unrest, living in war zones), childhood exposures, and economic status. Positive SDoMH include social support, connection, a stable environment, health equity, and access to health care.[33]

Understanding the factors that contribute to an individual's presentation allows health care providers to expand their treatment focus to identify and advocate for the improvement of SDoMH in patients as both a treatment and a preventive measure. Treatment typically falls into tertiary prevention (which aims to reduce the burden of illness on those already affected). However, with knowledge of SDoMH, clinicians can augment protective factors through primary (eg, educational programs and community support services) or secondary preventive interventions (eg, reducing the impact of exposure to trauma or other health risks) and reduce the burden of negative SDoMH.[60,61] However, critical incident debriefing following a traumatic experience is potentially harmful, and it is not recommended.[62]

What Is Trauma-Informed Care and How Can Posttraumatic Distress Be Managed?

Trauma-informed care is a treatment improvement protocol (TIP) developed by the Substance Abuse and Mental Health Services Administration (SAMHSA) following 2 landmark studies (ie, the 1998 ACE study and the 2007 Women, Co-Occurring Disorders and Violence Study). SAMHSA described the TIC framework in 2012 and published TIP 57, the 343-page guideline, in 2014. This resource, written for medical professionals, is available online. The 3 primary goals of trauma-informed care are as follows: (1) appreciating the prevalence of trauma; (2) recognizing how trauma affects all individuals involved with the program, organization, or system; and (3) putting this knowledge into practice.[63]

Treatment approaches include the use of standardized screening tools and a strength-based focus to promote resilience, while minimizing retraumatization risk. These approaches seek to provide safe and compassionate care.

Traumatic experiences are common; 70% of people experience trauma during their lifetime.[64] Posttraumatic distress is a natural response; moreover, most people's symptoms resolve without developing PTSD. The lifetime prevalence of PTSD in the United States is thought to be between 6.1% and 9.2%.[65] However, rates of PTSD vary widely depending on one's ethnicity, race, gender, and vocational exposures, with women having twice the prevalence of men (ie, 8% for women and 4% for men) and with rates as high as 26.9% in American Indian/Alaskan Native women.[66]

Following exposure to trauma, individuals should not wait to seek treatment if distressing or impairing symptoms develop. First-line treatment for trauma-related symptoms includes manualized evidence-based trauma-focused therapies. The Veteran's Affairs (VA) and Department of Defense (DoD) Clinical Practice Guidelines for PTSD recommend several trauma-focused therapies, including Eye Movement Desensitization and Reprocessing (EMDR), CPT, and prolonged exposure.[67] Critical incident debriefing is specifically not recommended following a traumatic event.[62]

The effectiveness of trauma-focused therapies in children and adolescents has been studied to establish evidence-based approaches for this population. A systematic review by Moner and colleagues[68] explored the various therapies for PTSD in youth, including trauma-focused cognitive-behavioral therapy and dyadic therapies (eg, child-parent dyad exposure therapy and dyad client-centered therapy). These therapies have shown promise in addressing PTSD symptoms and may be beneficial when both parents and children are exposed to the same traumatic events and when parents are dealing with their own trauma response.

Treatment considerations in pediatric practice may include primary prevention of further trauma, as well as secondary prevention (eg, inappropriate reactions by school personnel, early detection, and intervention) to mitigate symptom progression. For adults, therapy and long-term behavioral management strategies are essential to prevent the intergenerational and transgenerational transmission of trauma to offspring.[69,70] These approaches ensure a comprehensive strategy for addressing the impact of trauma across the lifespan.

Pharmacologic interventions are indicated when obstacles to engaging in an evidence-based trauma-focused therapy are present. Intense symptoms may be a barrier to therapy that can be mitigated by initiating medications. Paroxetine, sertraline, and venlafaxine are the only 3 medications strongly recommended by the VA/DoD guidelines for PTSD.[67] However, there is a lack of US Food and Drug Administration–approved medications in children and adolescents. Paroxetine should be avoided in youth due to the increased risk of suicidal ideation and behavior, while sertraline may be

associated with a reduced risk in anxiety disorders.[71] Furthermore, there is a paucity of data regarding the tolerability of antidepressants in the treatment of PTSD in youth, particularly with respect to suicidal ideation and behavior.[71] Treatment trials lasting 8–12 weeks are recommended, with initiation before, during, or after therapy.

According to a 2024 network meta-analysis, trauma-related sleep disturbances may be best treated by prazosin, an α-adrenergic receptor blocker; studies using doses of 15 mg a night for men and 7 mg a night for women have yielded the best results.[33,72] Trauma-related symptoms should not be treated with benzodiazepines, as they can hinder the therapeutic process, worsen outcomes, and lead to misuse and adverse cognitive effects.[73]

Positive psychology offers a treatment approach that improves mental health and well-being (eg, with optimism, resilience, wisdom, spirituality, social support, and positive family dynamics), as well as reduced morbidity and mortality rates, prevention of mental illness, decreased levels of perceived stress, and enhanced recovery from serious mental illness.[74] This approach is thought to work through social, biological, behavioral, and psychotherapeutic interventions (eg, setting personal goals, practicing optimism, and engaging in physical exercise).[74]

Posttraumatic growth (characterized by a greater appreciation for life, improved interpersonal relationships, changed priorities, and increased perception of possibilities in life) is the positive psychological change that occurs after a traumatic experience. Listening, rebuilding, and having tolerance are vital components of posttraumatic growth.[75] Health care providers are encouraged to listen for themes of growth and relay them to the patient, being mindful and empathic, while not attempting to "fix" the situation. Although it may be difficult for trauma survivors to appreciate how growth could flow from their traumatic experience, health care providers can illuminate their struggle, to recover as a stimulus for growth. Treaters can use patients' themes to rebuild a growth-oriented narrative. Resolution of cognitive distortions that arose after a trauma (eg, fault, responsibility, and distrust) facilitates recovery.[75]

What Happened to Mr C?

The overlap between PTSD and postconcussive symptoms was reviewed, considering that mild TBI/postconcussive symptoms can be seen in patients with depression with no history of head injury. Treatments on the horizon were discussed, including electroencephalogram neurofeedback Prism and psychedelic-assisted treatment.

Mr C participated in an intensive clinical program with dialectical behavioral therapy to manage his mood and improve social skills, to regulate difficult emotions, to manage relationship conflicts more effectively, and to maintain and improve interpersonal relationships. In addition, he underwent in vivo group exposure to reduce anxiety and discomfort related to PTSD (to learn how to approach situations that made him anxious or distressed, which he would typically avoid).

Mr C also participated in a Warrior Cognitive Health Group to learn techniques to help improve cognitive function in challenging situations. He was taught cognitive strategies (to improve his memory) and other tools (to improve his responses to situations in which he was faced with mental challenges).

CONCLUSION

ACEs are potentially traumatic events that occur throughout childhood and adolescence and that contribute to a lasting negative impact on health and well-being. Moreover, there is a dose-response relationship with adverse sequelae.

Those with 4 or more ACEs have a 4–12-fold higher risk for drug abuse, alcoholism, depression, and suicide attempts, compared to those without ACEs. ACEs adversely affect psychological and physiologic functions (eg, altering inflammatory, immune, and genetic biomarkers) that have health implications later in life. Childhood adversity shortens telomere length. Although telomeres shorten with each cellular division during aging, stress and inflammation can accelerate this shortening process.

Psychological stressors contribute to developmental delays and adversely affect a child's psychosocial functioning and classroom adaptation, as hypervigilance to threatening stimuli can interfere with the development of healthy attachments, leaving them to feel isolated and lonely, and predisposing them to having difficulty with emotional regulation and aggression. The VA and DoD Clinical Practice Guidelines for PTSD recommend several trauma-focused therapies, including EMDR, CPT, and prolonged exposure. However, critical incident debriefing is specifically not recommended after a traumatic event. Resolution of cognitive distortions that arise after a trauma (eg, fault, responsibility, and distrust) facilitates recovery.

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